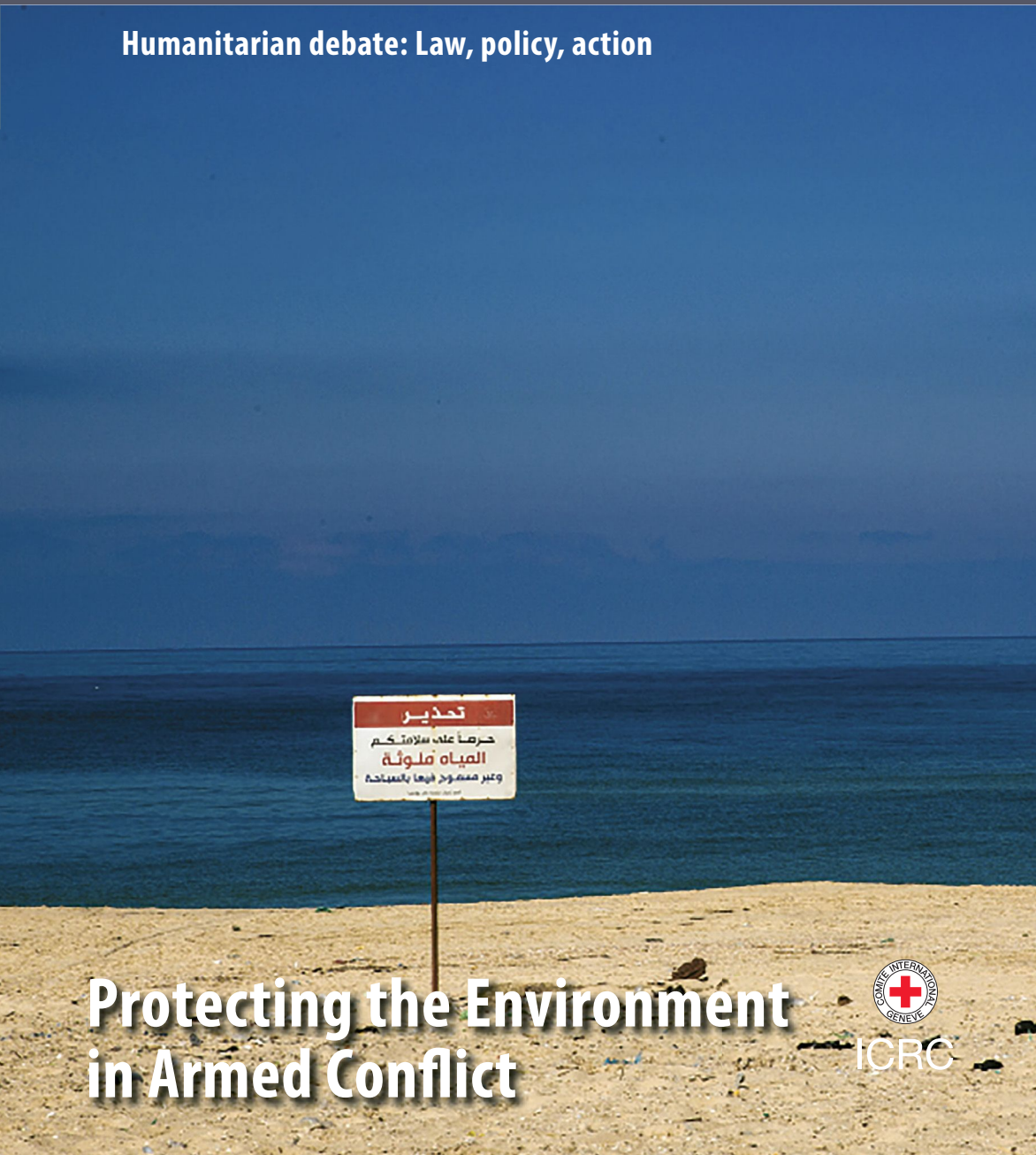
Volume 105 Number 924

International Review of the Red Cross

Humanitarian debate: Law, policy, action



Protecting the Environment in Armed Conflict

ICRC

International
Review
of the Red Cross

Aim and scope

Established in 1869, the *International Review of the Red Cross* is a peer-reviewed journal published by the ICRC and Cambridge University Press. Its aim is to promote reflection on humanitarian law, policy and action in armed conflict and other situations of collective armed violence. A specialized journal in humanitarian law, it endeavours to promote knowledge, critical analysis and development of the law, and contribute to the prevention of violations of rules protecting fundamental rights and values. The *Review* offers a forum for discussion on contemporary humanitarian action as well as analysis of the causes and characteristics of conflicts so as to give a clearer insight into the humanitarian problems they generate. Finally, the *Review* informs its readership on questions pertaining to the International Red Cross and Red Crescent Movement and in particular on the activities and policies of the ICRC.

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The International Committee of the Red Cross (ICRC) is an impartial, neutral and independent organization whose exclusively humanitarian mission is to protect the lives and dignity of victims of war and other situations of violence and to provide them with assistance. It directs and coordinates the international activities conducted by the International Red Cross and Red Crescent Movement in armed conflict and other situations of violence. It also endeavours to prevent suffering by promoting and strengthening international humanitarian law and universal humanitarian principles. Established in 1863, the ICRC is at the origin of the Movement.

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International Review of the Red Cross (2023), **105** (924), 1167–1168.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000462

IRRC_

EDITORIAL

PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT

Bruno Demeyere, Editor-in-Chief

It has been well over a decade since the *International Review of the Red Cross* dedicated an issue entirely to the environment, and since then, there has been a wave of momentum to better protect the environment in war.[1] Two major developments since 2010 in particular warranted thoroughly revisiting this topic:

1. After a decade of work, the UN International Law Commission finalized and adopted its Principles on Protection of the Environment in Relation to Armed Conflicts, and these were then welcomed in a UN General Assembly resolution on 7 December 2022.[2]
2. In 2020, the International Committee of the Red Cross (ICRC) published its *Guidelines on the Protection of the Natural Environment in Armed Conflict*, updating their 1994 predecessor and setting out existing rules under international humanitarian law (IHL).[3]

Much has been written and said elsewhere about the protection of the environment during armed conflict. Still, we received more proposals in response to the call for papers for this edition than we have ever received before. The proposals were thoughtful and covered a wide range of topics, and authors' enthusiasm for this subject – and for writing innovatively on it – was palpable. It could not have been made any clearer that it was certainly time to revisit the theme in the *Review*'s pages. What you can read in this edition are the very best papers, chosen after a thorough selection process.

In the context of the historical development of IHL, the specific protection of the environment is relatively recent. Treaty rules explicitly addressing environmental impacts have only existed since the 1970s – that is, the 1976

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1 Thematic issue on "Environment", *International Review of the Red Cross*, Vol. 92, No. 879, 2010. For the era before 2010, one needs to go back as far as Vol. 75, No. 798, 1992, where a cluster of articles deal with the topic. An earlier article can be found in Antoine Bouvier, "Protection of the Natural Environment in Time of Armed Conflict", *International Review of the Red Cross*, Vol. 74, No. 792, 1991.

2 UNGA Res. 77/104, "Protection of the Environment in Relation to Armed Conflicts", 7 December 2022, Annex.

3 ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law, with Commentary*, Geneva, September 2020.

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Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, and Articles 35(3) and 55 of Additional Protocol I. In addition to these emblematic rules, IHL treaty and customary rules provide specific and general protection to the natural environment in armed conflict. In the ICRC's 2005 Customary Law Study,[4] Chapter 14 ("The Natural Environment") contains three rules (43, 44 and 45) regulating the topic. While these rules enjoy broad support, a limited number of States, vocal on the topic, do not accept Rule 45 as reflective of the law.

And yet, *anno* 2023, we are light years away from the 1970s when it comes to an understanding of the interrelationships between ecological and human health and the severity of the multi-layered and diverse threats that armed conflicts and the behaviour of the parties to those conflicts may pose to the environment. This issue of the *Review* seeks to foreground the multiple ways in which conflict may adversely impact the environment, thus countering the often-repeated narrative characterizing the environment as a "silent victim".

The articles in this issue develop cogent analysis regarding how the existing international legal framework protects the environment in times of armed conflict. It is the *Review*'s most sincere hope that these contributions stimulate further legal and policy debates and, most importantly, that they bring the focus to what is most needed today – the operationalization of the existing legal framework – with a view to strengthening environmental protection by warring parties.

Finally, an important announcement: for reasons of space, not all high-quality submissions selected could be featured in this issue. Thus, the debate continues in our spring 2024 issue, where we will feature several more articles on the subject, demonstrating the continued relevance and vibrancy of the topic and the need to enhance environmental wartime protection.

4 Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), available at: https://ihl-databases.icrc.org/en/customary-ihl.

International Review of the Red Cross (2023), **105** (924), 1169–1179.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000437

IRRC_

Interview with Marja Lehto

Former International Law Commission Special Rapporteur on the Protection of the Environment in Relation to Armed Conflicts*

Dr Marja Lehto is Ambassador for International Legal Affairs at the Ministry for Foreign Affairs of Finland, and Adjunct Professor of International Law at the University of Helsinki. She was a member of the United Nations (UN) International Law Commission (ILC) and served as the Special Rapporteur for the topic "Protection of the Environment in Relation to Armed Conflicts" from 2017 to 2022. Dr Lehto is also a member of the Council of the International Institute of Humanitarian Law since 2019. She has formerly served, inter alia*, as Legal Adviser to the Finnish UN Mission in New York (1995–2000), as Head of the Unit for Public International Law (2000–09), and as Finland's Ambassador to Luxembourg (2009–14). For most of her career, she has worked on issues related to international peace and security, including international criminal justice and international humanitarian law (IHL), and she has published on a broad range of international legal questions related to the law of the sea, international environmental law (IEL), State succession, use of force, armed conflicts, terrorism and cyber security.*

* Interview conducted by Bruno Demeyere, Editor-in-Chief of the *Review*.

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Keywords: environment, International Law Commission, international humanitarian law, international environmental law, international human rights law, Additional Protocol I, United Nations.

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The adoption by the ILC in August 2022 of the Draft Principles on Protection of the Environment in Relation to Armed Conflicts [PERAC Principles] and their commentaries, and the subsequent adoption by the UN General Assembly of a resolution on the topic, was a historical moment for international law on the protection of the environment in armed conflict. In a few words, could you introduce us to the content and purpose of the Principles?

The set of PERAC Principles consists of twenty-seven Principles, a preamble and commentaries, which clarify and codify the international law applicable to the protection of the environment in conflict-affected areas and make recommendations concerning its further development. While many of the Principles reflect general international law, other Principles identify measures that should be taken to prevent, mitigate or remediate environmental harm, based both on existing treaty-based obligations and on practice by States and international organizations.

The purpose of the Principles is, simply put, "to enhance the protection of the environment in relation to armed conflicts". The Principles focus on a problem area that has largely been ignored in international environmental law, and only sporadically addressed from the point of view of IHL, or the "law of armed conflict", which is the term used in the Principles. In this sense, they seek to fill an obvious gap.

One of the important and novel characteristics of the PERAC Principles is that they draw from IHL, international human rights law and IEL. Why was this approach important, including for the promotion of a more coherent reading of the international legal framework? In particular, how does IEL feature in the Principles?

The interplay of different areas of international law is first of all related to the temporal scope of the Principles, which extends from the time before the outbreak of an armed conflict to the aftermath of conflict.

Furthermore, the ILC has recognized that in addition to the law of armed conflict, as *lex specialis* in armed conflict, other relevant rules of international law retain their relevance throughout armed conflict and may have a complementary role in respect of the law of armed conflict. This integrative approach has been an important point of departure for the Commission's work and is most visible in the Principles relative to situations of occupation.

For instance, one of the Principles requires that an Occupying Power, when it is legally permitted to engage in the exploitation of the natural resources of the occupied territory, does so in a manner that ensures their sustainable use and

minimizes environmental harm. This Principle rephrases the age-old rule of the law of occupation regarding usufruct, taking into account subsequent developments in IEL. Another Principle contains the established principle of prevention of trans-boundary harm and applies it specifically to situations of occupation. In particular, it mentions that in addition to the territory of third States and areas beyond national jurisdiction, the Principle also protects any area of the occupied State that lies beyond the occupied territory.

What was the ILC's mandate that culminated in the PERAC Principles, and what was the process to fulfil that mandate?

The initiative for the topic came from a 2009 report of the UN Environment Programme [UNEP], based on a conference it had organized together with the International Committee of the Red Cross [ICRC] and the Environmental Law Institute. The report contained a number of recommendations, one of which asked the ILC to "examine the existing international law for protecting the environment during armed conflict and recommend how it could be clarified, codified and expanded".[1]

The Principles and their commentaries are the result of roughly a decade's work in the ILC. This entailed six reports by two successive Special Rapporteurs, Dr Marie Jacobsson of Sweden and myself, and all the ordinary phases in the Commission's work: annual debates in the plenary and drafting committee, adoption of commentaries, and first and second reading. The process was, by the Commission's standards, fairly quick, both with regard to the initiation of the work and its completion. The transition from one Special Rapporteur to another was also smooth, as much of the groundwork had already been laid down when I took over in 2017 and there was no need to revisit the basic assumptions on the basis of which the work had proceeded.

Apart from the process within the Commission, I should mention external contacts, in particular interaction with States, relevant international organizations and other stakeholders, which has been a constant feature of the work on this topic over the years.

How were States involved in the development of the PERAC Principles?

The ILC is a subsidiary organ of the UN General Assembly, and States are provided an opportunity to comment on the Commission's ongoing work annually in the Legal (Sixth) Committee of the General Assembly. In addition, States are regularly invited to send in written comments after the first reading of any topic. The interaction between the Commission and States may occasionally also take other forms, but this institutional dialogue is at its core.

1 UNEP, *Protecting the Environment during Armed Conflict: An Inventory and Analysis of International Law*, 2009, available at: https://wedocs.unep.org/20.500.11822/7813.

In accordance with these established procedures, the Commission has been able to benefit from the regular feedback from States when preparing the PERAC Principles. Moreover, the second reading last year was preceded by a consultation period during which States were invited to send in written comments on the first reading text. This time, and given the nature of the topic, the invitation was also addressed to a number of international and other expert organizations.

Many of the changes made to the Draft Principles and their commentaries in the context of the second reading reflected and responded to the comments received, either in written form or made in the Sixth Committee, in the context of the annual debates since 2014. In the final Sixth Committee debate last year addressing the Draft Principles and commentaries adopted on second reading, nearly seventy States took part, which shows interest and commitment on their part.

Societal understandings of the environment and our environmental responsibilities have changed considerably over time. Today, we also have a better understanding of, and data on, the environmental impacts of armed conflicts. Did this play a role in your work as Special Rapporteur?

The enhanced understanding of the environmental consequences of armed conflict was an important point of departure for the entire work on PERAC and affected how the topic was framed, in particular its temporal scope. Furthermore, in identifying issues that would be particularly relevant for the protection of the environment in conflict-affected areas, the ILC profited from consultations with relevant expert organizations, including UNEP, UNESCO and the ICRC, and from related research.

In my own work as Special Rapporteur, perhaps the most obvious example of how the better understanding of the environmental effects of armed conflict was taken into account concerns the focus given to natural resources. Armed conflicts often create increased opportunities for illegal exploitation of natural resources, and natural resources can also be drivers of conflict.

Altogether, five of the Principles are relevant to the protection of natural resources from environmentally harmful or unsustainable exploitation. They include the prohibition of pillage and clarify that the prohibition is applicable to natural resources whenever they constitute property. In situations of occupation, the prohibition of pillage forms an absolute limit to the exploitation of the natural resources of an occupied territory by the Occupying Power. At the same time, the Principle I mentioned earlier that seeks to protect the natural resources of the occupied territory from excessive and unsustainable use takes into account more long-term environmental degradation linked to harmful occupation practices.

Two further Principles on due diligence and liability of business enterprises are relevant in the context of illegal exploitation of natural resources in conflict-affected areas, given the role that corporations and other business enterprises may have in perpetuating conflict economies and in causing environmental harm. The fifth Principle addresses the inadvertent environmental effects of conflict-induced

human displacement, which are mainly related to the use of natural resources for food and shelter.

The PERAC Principles focus on environmental protection in different phases before, during and after an armed conflict – why was it important to have this broad temporal scope?

The broad temporal scope of the Principles is one of the distinctive features of the PERAC topic, and the reason why it is entitled "Protection of the Environment in Relation to Armed Conflicts". It reflects the experience of modern conflicts, the majority of which are non-international in nature, often with external intervention in support of one or more of the parties. Such conflicts may not have a clear end or may end only to ignite again.

The temporal scope also derives from the recognition that protection of the environment must be continuous from the time before the conflict throughout the conflict and in post-conflict situations. Preventive measures are likely to be the most effective if they are taken before a conflict breaks out. The environmental effects of armed conflict also continue to be felt in its aftermath, sometimes for decades or longer, and timely action to address them may prevent greater harm and facilitate the transition to a sustainable peace.

The broad temporal scope has directed the ILC to identify environmental problems that are cross-cutting through different phases. In this sense it is important to point out that the scope – before, during, after – does not mean that the Principles can be neatly divided according to these phases. Many of the Principles are in fact of "general applicability". Even where a Principle has been labelled as applicable "in armed conflict" or "after armed conflict", the commentary may clarify that its scope is broader.

For instance, the Principle concerning the removal or rendering harmless of toxic or other hazardous remnants of war is located in a section that contains Principles applicable after armed conflict. In the context of the second reading, the phrase "after an armed conflict" was removed of the text of the Principle and replaced by the words "as soon as possible", which indicate a time frame that is not related to a formal end of an armed conflict. As for the Principles relative to situations of occupation, it is specifically mentioned in the commentary that all the other Principles, *mutatis mutandis*, are applicable in situations of occupation, given the variety of different situations of occupation.

What, in your opinion, are the opportunities in the coming decade when it comes to international law governing environmental protection during armed conflicts, also taking into consideration the gravity of the biodiversity and climate crisis?

There is no denying that armed conflicts can generate severe environmental effects and may also exacerbate global environmental challenges. This has been widely recognized, including in the final UN General Assembly debate on the PERAC

Principles. At the same time, some States were concerned about the possibility of new legal obligations being imposed on them.

In the past, important legal developments for reducing wartime environmental harm have taken place after particularly shocking events. The ENMOD Convention and the two environmental articles in Additional Protocol I to the Geneva Conventions [AP I] were adopted in the aftermath of the Vietnam War, and the UN Compensation Commission was established after the invasion and occupation of Kuwait by Iraq. It may be that the ongoing armed conflict in Ukraine, which has made environmental devastation more visible than in many other conflicts, will trigger new legal developments either regarding substantive law or in the way of strengthening mechanisms of accountability.

To mention a few processes that are under way, preliminary discussions have begun concerning the adoption of ecocide as a new international crime. Moreover, the Parliamentary Assembly of the Council of Europe has made a proposal for a feasibility study regarding a new regional legal instrument for the protection of the environment and the human rights to life and to a healthy environment in armed conflicts and occupation.[2] Finally, interesting proceedings are pending in international courts and tribunals. I should add that some of the critical issues concerning international responsibility for environmental damage in armed conflict have already been clarified by the International Court of Justice and are reflected in the PERAC Principles.

What do you hope the PERAC Principles will achieve at the diplomatic and international levels?

I believe that the process in which the Principles have been adopted, including the annual debates in the Sixth Committee, has already contributed to sensitizing States to the environmental impact of conflicts and to the international obligations that apply even in situations of armed conflict. It is no more credible to argue, for instance, that as long as widespread, long-term and severe damage is not inflicted on the environment, no other rules are to be observed, or that nothing could be said about the environmental obligations of an Occupying Power because the Hague Regulations of 1907 do not mention the concept of the environment.

Regarding the diplomatic level, there has been very little appetite in recent decades for negotiating a new treaty on environmental issues related to armed conflict, or reopening the existing conventions for this purpose. This is why recent legal developments have taken another form and largely rely on the interpretation of the existing rights and obligations of States. It can be hoped that the combined efforts of the ILC and the ICRC, which issued its updated *Guidelines on the Protection of the Natural Environment in Armed Conflict* [ICRC Guidelines] in 2020, will result in States having a clearer view of both their

2 Parliamentary Assembly of the Council of Europe, Recommendation 2246, 25 January 2023.

obligations and the opportunities for improving the protection of the environment in and in relation to armed conflicts.

What can and should States do to promote and implement the PERAC Principles?

Given that the Principles and their commentaries have been prepared very much in consultation with States and international organizations, it can be hoped that these actors will find the final outcome useful and will take steps to consult it and implement it in their practice.

While not all States have recent experience of being involved in an armed conflict, or experience of being an Occupying Power, they may have connections to conflict-affected areas, either as home States of business enterprises that operate in such areas, troop-contributing States to peace operations, donors in humanitarian assistance, or otherwise. There may also be an armed conflict in the region, which may entail trans-boundary environmental effects in third States.

The UN General Assembly has encouraged the widest possible dissemination of the Principles and their commentaries. At the domestic level, this would mean making sure that all relevant actors within the State receive the information, including but not limited to armed forces. Some of the Principles ask States specifically to take legislative or other measures to improve the protection of the environment in conflict. The dissemination effort should therefore be inclusive, including relevant authorities, members of parliament, academics and civil society organizations.

Several States have organized discussion and awareness-raising events around the Principles. Dissemination could also include making known and sharing of good practices, as was recently done in the context of the meeting of State experts organized by Switzerland and the ICRC.

Let's zoom in on a specific example: Principle 4 states that "States should designate, by agreement or otherwise, areas of environmental importance as protected zones in the event of an armed conflict, including where those areas are of cultural importance". Why is this Principle important, and how might it be used in future?

There is very little question of the beneficial impact of designating environmentally important or vulnerable areas so as to protect them from hostilities. Principle 4 is the latest addition to a series of proposals to this effect, including one discussed in the negotiations of AP I, the International Union for Conservation of Nature draft convention, the *San Remo Manual on International Law Applicable to Armed Conflicts at Sea*, and more recent proposals, including in the updated ICRC Guidelines, which call for designating areas of particular importance or fragility as demilitarized zones.

Principle 4 on protected zones urges States to designate areas of environmental importance as protected zones preferably in time of peace but

with a view to protecting them in armed conflict. What this means in practice is that particular weight should be given to areas that are susceptible to the adverse consequences of hostilities. The threshold for the designation of "environmental importance" is not unreasonably high, and an area can be designated as a protected zone in different ways. Principle 4 is closely related to Principle 18, which deals with the protection of the zone in armed conflict and provides that a zone which is designated by agreement shall be protected against any attack, except insofar as it contains a military objective. Principle 18 also does not affect the protections that may be afforded to the zone by virtue of other treaties such as multilateral environmental agreements.

Whether a zone will remain protected in armed conflict will also depend on the agreement concerning its establishment. Ideally, such an agreement should contain measures of active protection. The commentary to the PERAC Principles recommends that designation of an environmentally important area as a protected zone in conflict should be accompanied by measures which reduce the likelihood that the zone would be affected by military operations.

What role does civil society have to play in carrying the PERAC Principles forward?

Civil society has already played a role during the preparation of the Principles. In the context of the consultation period that preceded the second reading of the Principles, six organizations – Al-Haq, Amnesty International, the Conflict and Environment Observatory, Geneva Water Hub, the International Human Rights Clinic of Harvard Law School, and the London Zoological Society – prepared a joint civil society submission to the ILC. Some of these organizations also contributed to discussions and events around the Principles.

Relevant civil society organizations, which often have considerable expertise on different aspects of the PERAC theme, also contribute in many ways to the promotion of the legal framework for PERAC and awareness-raising on the environmental challenges in armed conflict.

During your mandate as Special Rapporteur, what were some of the main issues that States raised during consultations concerning the protection of environment during armed conflicts that you observed?

While the scope of the topic is broad, there have been recurrent arguments about an issue or provision falling out of its scope. For instance, when the Draft Principle on the protection of the environment of indigenous peoples was put forward in 2016, there were many comments that failed to see its connection to the topic. In the context of the second reading, there were calls to broaden the scope of this Principle to cover minorities, local populations or other groups with a special relationship to the environment. The ILC held that it was justified to retain the original focus of the provision on indigenous peoples because of the crucial role

that these peoples, lands and territories play in the conservation of biological diversity.

That there is no general distinction between international and non-international armed conflicts is an aspect that has generated quite a lot of debate in the discussions on the PERAC Principles at the General Assembly over the years, even though it only has relevance with regard to the Principles applicable during armed conflict. Some of the Principles applicable during armed conflict, and those applicable in situations of occupation, moreover, only apply to international armed conflicts.

Most of the twenty-seven Principles are unaffected by the classification of armed conflicts. Several of these Principles use notions that include non-State armed groups and take into account, *inter alia*, that it has been a common phenomenon in recent conflicts for non-State armed groups to exercise control over territories and people. In addition, some Principles are of practical importance for non-international armed conflicts, and I should underline that this is not a question of applicability but a question of relevance.

A third issue concerns the capacity of the Principles to create new obligations for States. What I can say in this regard is that the Principles are a product of an independent expert body, the ILC, and as such are of course not binding. At the same time, however, several of the Principles reflect existing obligations of States, whether customary or treaty-based, and give greater clarity as to how they are to be understood in the context of armed conflicts and environmental protection.

The PERAC Principles clarify obligations of parties to armed conflicts, including non-State armed groups, but they also look at the role of non-belligerent States and international organizations. Considering the environmental damage we witness during contemporary armed conflicts, how can the PERAC Principles be used to influence parties to armed conflict, and also other actors, to enhance environmental protection in today's armed conflicts?

It is a further aspect of the broad scope of the Principles that they do not only focus on the obligations of the warring parties. Many of the Principles address States in general, relevant international organizations or other relevant actors, which may include civil society organizations.

Some measures are in fact most effective if they are taken by other States than those involved in the conflict. Reference can in this regard be made to the two Principles on due diligence by business enterprises and liability of business enterprises. These provisions ask States to take appropriate measures with a view to ensuring that business enterprises operating in conflict-affected areas exercise environmental due diligence and can be held liable when they or their subsidiaries cause environmental harm.

While these Principles address both home and host States of business enterprises, the former may often be in a better position to provide adequate and

effective procedures and remedies for the victims of environmental harm. The ILC recalls in this regard that the collapse of State and local institutions is a common consequence of armed conflict, and one that undermines law enforcement and protection of rights as well as integrity of justice also in the aftermath of conflict.

Similarly, the Principles seeking to reduce the environmental footprint of peace operations, and military presence, or to minimize the environmental impact of conflict-induced human displacement are addressed primarily to States not involved in the conflict, international organizations or other relevant actors, as the case may be.

Reference could also be made to the Principles dealing with sharing of and granting access to environmental information, post-conflict environmental assessments and remedial measures as well as relief and assistance. These Principles are addressed not only to the parties or former parties to conflict but also to other States or international organizations that are in a position to provide information or remedy.

There have been criticisms about the ability of existing international obligations, including under IHL, to ensure protection of the environment in armed conflicts. What is your view on this, in light of recent developments related to the international legal framework?

I would think that much of this criticism is related to the absence of further treaty developments since the adoption of AP I. At the same time, the attitude towards the existing treaty law providing direct protection to the environment – the two environmental articles in AP I – has been somewhat ambivalent, given that the threshold of "widespread, long-term and severe" is seen as impractically high. That being said, it is clear that these provisions have value in that they set an absolute limit to wartime environmental damage.

Recent developments, in particular the publication in 2020 of the updated ICRC Guidelines, have provided cogent arguments to counter this kind of criticism. The Guidelines are a major work that systematically goes through the relevant rules of IHL and reveals the capacity of many provisions originally designed for the protection of civilians to also provide general or indirect protection to the environment.

A large part of the protection that these rules provide to the environment is dependent on the understanding of the environment as inherently civilian. As a consequence of the civilian nature of the environment, the principles of distinction, proportionality and precaution apply to the environment. This is also the case for many of the specific rules of IHL. The understanding of the environment as inherently civilian in nature, which the PERAC Principles share, gets support from current scientific knowledge as well as from the legal and political recognition of the interrelationship between the health and survival of humans and the environment in which they live.

How do the ICRC Guidelines and the PERAC Principles complement each other, including in the "during" armed conflict phase?

The ILC's work on the PERAC topic has proceeded in parallel with the updating of the ICRC Guidelines. Both projects were initiated by the same UNEP report to respond to the need for a more coherent legal framework for the protection of the environment in and in relation to armed conflicts. They share the same fundamental aim of clarifying and strengthening the international law applicable to conflict-related environmental harm, but differ in scope and approach.

The first difference is that, like the original 1994 version, the new ICRC Guidelines deal with situations of armed conflict whereas the PERAC Principles also cover the pre- and post-conflict phases. Second, the principal focus of the ICRC Guidelines is on IHL while the ILC work has also taken into account other areas of international law, in particular IEL and international human rights law. A third difference is that the ICRC Guidelines are presented as a restatement of law as it stands, while the PERAC Principles, in accordance with the ILC's mandate, consist of progressive development and codification of international law. It is mainly because of these differences that the two documents are complementary with each other.

Regarding the "during" phase, the ICRC Guidelines, with their focus on armed conflict, contain a much more comprehensive list of relevant IHL provisions than the PERAC Principles. To the extent that the two documents overlap, however, they are largely consistent with each other. In addition, the analysis contained in the respective commentaries contributes to their complementarity. In this regard, as far as the "during" phase is concerned, reference could be made to the extensive and in-depth commentary in the ICRC Guidelines regarding the triple threshold of "widespread, long-term and severe", on the one hand, and the commentaries to the PERAC Principles applicable in situations of occupation, on the other.

International Review of the Red Cross (2023), **105** (924), 1180–1207.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000401

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The protection of the natural environment under international humanitarian law: The ICRC's 2020 Guidelines

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Abstract

In 2020, the International Committee of the Red Cross's work on the protection of the natural environment under international humanitarian law (IHL) produced the Committee's Guidelines on the Protection of the Natural Environment in Armed Conflict *(ICRC Guidelines), an update of their 1994 predecessor. The ICRC Guidelines consist of thirty-two rules and recommendations under IHL, each accompanied by a commentary explaining their legal basis and providing guidance for interpretation. This article presents an overview of the context surrounding the*

† The views expressed here are those of the authors and do not necessarily reflect the position of the International Committee of the Red Cross. The authors thank Lindsey Cameron, Laurent Gisel, Abby Zeith and Tilman Rodenhäuser for their valuable comments on earlier drafts, as well as Alisa Gerasimenko for her help with references.

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Guidelines, certain key legal content, and practical implications for the conduct of parties to armed conflict as they fight.

Keywords: international humanitarian law, natural environment, environmental protection, armed conflict, war, climate change.

Introduction

In 2020, the International Committee of the Red Cross's (ICRC) work on the protection of the natural environment under international humanitarian law (IHL) produced the Committee's *Guidelines on the Protection of the Natural Environment in Armed Conflict* (ICRC Guidelines),[1] an update to their 1994 predecessor. The ICRC Guidelines consist of thirty-two rules and recommendations under IHL, each accompanied by a commentary explaining their legal basis and providing guidance for interpretation. This article presents an overview of the context surrounding the Guidelines, certain key content, and implications for the practice of parties to armed conflict. Rather than presenting each Guideline in turn – an exercise that would be tantamount to writing a new set of commentaries – the article focuses on ten salient issues of context, law and practice characterizing the application of the Guidelines in contemporary armed conflicts.

The ecological, scientific and legal context in which parties to armed conflict conduct military operations are the subject of the first four issues addressed, namely: the environmental crisis threatening humanity's survival, advancements in scientific and technological capacity to assess environmental damage, the provenance of the Guidelines, and their relationship with the International Law Commission's (ILC) Principles on the topic. The next four issues are headlining legal questions shaping the behaviour of parties to armed conflict towards the environment as they fight: how the natural environment is factored into the general conduct of hostility rules; interpreting the widespread, long-term and severe threshold of unlawful environmental damage; prospects for protected environmental zones during conflict; and when international criminal law accountability might apply to conflict-related environmental damage. The final set of issues relate to the implementation of the ICRC Guidelines in practice: their relevance for non-State armed groups, and key recommendations and good practice to guide future action.

1 ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law, with Commentary*, Geneva, September 2020 (ICRC Guidelines). The Guidelines are available in Arabic, English, Chinese, French, Spanish, Portuguese, Russian and Ukrainian. All paragraph citations in the main text of this article refer to the ICRC Guidelines.

Issues of context

Issue 1: Fighting without a Planet B: War in the climate and environment crisis

The main impetus for the development of the ICRC Guidelines was the environment and climate crisis posing an existential threat to humankind.[2] Hostilities are embedded in contexts marred by these interlocking crises: biodiversity worldwide has plummeted at an unprecedented rate in human history over the past fifty years,[3] with conflict an indirect driver of the loss.[4] This is dangerous because biodiversity and ecosystems are crucial to sustaining human life and supporting human adaptation to climate change: in 2022, the Sixth Assessment Report of Working Group II of the Intergovernmental Panel on Climate Change found, with high confidence, that human and ecosystem vulnerability are interdependent, and, with very high confidence, that safeguarding biodiversity and ecosystems is fundamental to climate-resilient development.[5] Thus, as ecosystems are damaged – including by hostilities – climate adaptation becomes more difficult, causing further distress to conflict-affected communities that are already the most exposed.[6]

The ICRC Guidelines seek to equip warring parties with guidance to begin grappling with this reality of environmental breakdown. Undoubtedly, there is much environmental damage caused by the dynamics of armed conflict that IHL does not address, but within their scope, the Guidelines present a framework for action under the body of law most familiar to modern militaries (whose environmental impacts are far from negligible). As the environment becomes less capable of absorbing the shocks of combat damage, greater respect for the IHL obligations reflected in the Guidelines can reduce the harm that conflict-affected communities are exposed to.[7]

2 *Ibid.*, p. 4. See paras 1–3 regarding environmental impacts of armed conflict.

3 The *Global Assessment Report on Biodiversity and Ecosystem Services* prepared by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) paints a grim picture of accelerated deterioration worldwide: natural ecosystems have declined by almost 50% on average relative to their earliest estimates, and around 25% of species are close to extinction. IPBES, *The Global Assessment Report on Biodiversity and Ecosystem Services: Summary for Policymakers*, IPBES Secretariat, Bonn, 2019, p. 25.

4 *Ibid.*, p. 25. It is also frequently cited that between 1950 and 2000, 80% of all major armed conflicts took place directly in biodiversity hotspots: Thor Hanson *et al.*, "Warfare in Biodiversity Hotspots", *Conservation Biology*, Vol. 23, No. 3, 2009. See also the article by Elaine Hsiao *et al.* in this issue of the *Review*: Elaine (Lan Yin) Hsiao, Adrian Garside, Doug Weir and Andrew J. Plumptre, "Protected Zones in Context: Exploring the Complexity of Armed Conflicts and Their Impacts on the Protection of Biodiversity", *International Review of the Red Cross*, Vol. 105, No. 924, 2023.

5 Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation, and Vulnerability*, Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Summary for Policymakers, Cambridge University Press, Cambridge, 2022, pp. 12, 32.

6 See, further, ICRC, *When Rain Turns to Dust: Understanding and Responding to the Combined Impact of Armed Conflicts and the Environment and Climate Crisis on People's Lives*, Geneva, 2020, p. 17.

7 See the ICRC's related call to parties to armed conflict in Peter Maurer, "Protecting the Environment in Armed Conflict: An ICRC View," *Environmental Policy and Law*, 23 February 2021, available at: https://

Issue 2: Understanding environmental damage in an era of scientific and technological advancement

In the three decades since the first iteration of the ICRC Guidelines was released, environmental science has advanced in leaps and bounds. The Guidelines urge parties to armed conflict to take account of this advancement; today the global community has a more sophisticated understanding of the interrelationships in ecological and human health, and of the direct and indirect environmental impacts of armed conflicts.[8] For example, United Nations Environment Programme (UNEP) post-conflict environmental assessments and civil society now more systematically document how the environment is damaged in war (whether or not there are black-smoke-filled skies from blazing oil preoccupying public attention).[9] Part of this improvement in understandings of environmental impacts has been driven by technological advancement: for example, Zwijnenburg and Ballinger have examined how internet access, smartphone technology and remote sensing data from satellite systems have revolutionized the documentation of links between war and environmental damage over the last decade.[10] In view of these advancements, the time-worn descriptor of the environment as a "silent victim" of armed conflict can hopefully be consigned to previous decades.

States, too, are increasingly leveraging scientific data and new technologies to assess the environmental impacts of their military operations. In a 2023 State expert meeting on "International Humanitarian Law: Protecting the Environment In Armed Conflicts", convened by the ICRC and Switzerland, States gave examples of the use of geospatial analysis as well as dedicated databases or data sheets to track military activities, products or services that impact the environment in order to inform the planning and conduct of their operations.[11] It is practices such as these that the ICRC Guidelines seek to amplify and encourage.

environmentalpolicyandlaw.com/news-blog/protecting-natural-environment-armed-conflicts-icrc-view (all internet references were accessed in September 2023).

8 See, for example, the commentary on taking contemporary and empirical knowledge into account in the planning and conduct of military operations in paras 54, 58, 65, 118 and 334.

9 UNEP has carried out such assessments in contexts including Iraq, Albania, Afghanistan and the Democratic Republic of the Congo: see ICRC Guidelines, above note 1, Bibliography, p. 126. See also Amnesty International *et al.*, *Witnessing the Environmental Impacts of War: Environmental Case Studies from Conflict Zones around the World*, November 2020. Non-governmental organizations such as the Conflict and Environment Observatory (CEOBS) and PAX also document the environmental footprint of military operations, conflict-related deforestation, and other environmental impacts linked to conflict in contexts including Syria, Ukraine and Yemen: see CEOBS, "Military and the Environment", available at: https://ceobs.org/topics/military-and-the-environment/; PAX, "Publications", available at: https://paxforpeace.nl/publications/.

10 See the article by Wim Zwijnenburg and Ollie Ballinger in this issue of the *Review*: Wim Zwijnenburg and Ollie Ballinger, "Leveraging Emerging Technologies to Enable Environmental Monitoring and Accountability in Conflict Zones", *International Review of the Red Cross*, Vol. 105, No. 924, 2023.

11 ICRC and Switzerland, *State Expert meeting on International Humanitarian Law: Protecting the Environment in Armed Conflicts: Chair's Summary*, 2023 (Chair's Summary), p. 10, available at: www.icrc.org/en/document/chairs-summary-report-state-expert-meeting-ihl-protecting-natural-environment-armed. The Chair's Summary is also available in Arabic, Chinese, French, Spanish and Russian.

Issue 3: The ICRC Guidelines: Background and methodology

Set within this context of global environmental crisis and contemporary scientific and technological advancement, in 2020 the ICRC released its updated *Guidelines on the Protection of the Natural Environment in Armed Conflict*. The Guidelines set out thirty-two rules and recommendations under IHL – a "one-stop shop" of relevant IHL addressing the natural environment. They are the updated iteration of their 1994 predecessor, which were initially requested by the United Nations (UN) General Assembly in the wake of the dramatic environmental damage that occurred during the 1990–91 Gulf War.[12] The 2020 Guidelines reflect the developments in international law that have taken place since 1994, and a concise commentary accompanies each rule or recommendation to aid understanding and to clarify its source and applicability. The Guidelines are, in a nutshell, intended to be a tool to facilitate the adoption of concrete implementation measures to strengthen the protection of the natural environment in armed conflict. Like their 1994 predecessor, they focus on how IHL protects the natural environment; the interaction between IHL and other bodies of international law is not the focus but is briefly addressed in preliminary considerations (paras 25–41).

The Guidelines are published under the sole authority of the ICRC, representing the ICRC's legal interpretation of existing IHL rules. They should not be interpreted as limiting or prejudicing existing obligations under international law or as creating or developing new ones (para. 12). The ICRC's mandate pursuant to the Statutes of the International Red Cross and Red Crescent Movement, approved by States party to the 1949 Geneva Conventions, includes working "for the understanding and dissemination of knowledge of IHL" and "for the faithful application of IHL".[13] The update of the Guidelines was undertaken in line with this mandate.

The starting point for the development of the 2020 Guidelines was the text of the 1994 version. The ICRC reviewed subsequent developments in treaty and customary IHL, drawing in particular on the clarifications provided by the ICRC's 2005 Customary Law Study,[14] and updated the 1994 Guidelines to reflect these. The 2020 Guidelines rely on the Customary Law Study as it represents the ICRC's reading of the status of customary law; the accompanying commentary refers to diverging views on the Study and, where relevant, the customary status of certain of

12 UNGA Res. 47/37, 9 February 1993, para. 4.

13 Statutes of the International Red Cross and Red Crescent Movement, 1986 (amended 1995 and 2006), Art. 5(2), available at: www.icrc.org/en/doc/assets/files/other/statutes-en-a5.pdf.

14 Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, and Vol. 2: *Practice*, Cambridge University Press, Cambridge, 2005, reprinted 2009 (ICRC Customary Law Study). References in the present article to page numbers in the ICRC Customary Law Study are to the 2009 reprint. PDFs of this publication are available at: www.icrc.org/en/doc/assets/files/other/customary-international-humanitarian-law-i-icrc-eng.pdf (Vol. 1) and www.icrc.org/en/doc/assets/files/other/customary-international-humanitarian-law-ii-icrc-eng.pdf (Vol. 2, Parts 1 and 2). For ease of reference, links in individual footnotes to specific rules are also provided to the corresponding rule in the ICRC's online Customary IHL Database, available at: https://ihl-databases.icrc.org/en/customary-ihl.

its rules. More specifically regarding interpretation methodology for specific treaty provisions, the ICRC applies the methodology for treaty interpretation set out in the 1969 Vienna Convention on the Law of Treaties, in particular Articles 31–33. Care was taken to ensure that the commentary of the Guidelines reflected State practice, including to ensure that the guidance is practicable. State consultations did not take place; however, to ensure that the Guidelines reflect diverging positions and cross-regional views, they were peer-reviewed by external practitioners and academics, including former or current government and military practitioners, who provided input and constructive critique in their personal capacity. The list of peer reviewers is provided as an Annex to the Guidelines.

Since the Guidelines' publication in September 2020, the ICRC has engaged in scores of public events and bilateral engagements to promote awareness of and compliance with IHL rules protecting the natural environment in conflict. The rest of this article attempts to capture the most frequently recurring issues that the ICRC has encountered throughout these engagements with State and other actors called on to interpret and apply IHL.

Issue 4: Momentum in international law

In tandem with the update of the ICRC Guidelines, the international legal community of States has generated a groundswell of momentum over the last decade to ensure that the environment is adequately protected in war. Resolutions and discussions in the UN General Assembly, the UN Environment Assembly and the UN Security Council have dedicated more attention to the topic, as have the UN Secretary-General's annual reports on the protection of civilians.[15] Most historically among these developments, the ILC's Principles on Protection of the Environment in Relation to Armed Conflicts (PERAC Principles) were the object of a UN General Assembly resolution adopted on 7 December 2022.[16] The PERAC Principles and the ICRC Guidelines share provenance: both were proposed to the ILC and the ICRC respectively by UNEP, in a report of the Nairobi Conference organized together with the ICRC and the Environmental Law Institute.[17] The completion of the PERAC Principles in 2022 thus represents over a decade of efforts to clarify and develop international law on this topic, and ushers in a new era of focus for international lawyers seized of this issue – from norm-setting to operationalization.[18]

15 An overview is given in the ICRC Guidelines, above note 1, paras 7–8; see also UNGA Res. ES-11/2, "Humanitarian Consequences of the Aggression against Ukraine", 28 March 2022, preambular paras 16, 18; Harvard Law School Program on International Law and Armed Conflict, "Catalogue of Practice of the U.N. Security Council Concerning the Environment, 1945–2021", available at: https://pilac.law.harvard.edu/unsc-practice-concerning-the-environment.

16 UNGA Res. 77/104, "Protection of the Environment in Relation to Armed Conflicts", 7 December 2022, Annex (PERAC Principles).

17 UNEP, *Protecting the Environment during Armed Conflict: An Inventory and Analysis of International Law*, Nairobi, 2009, pp. 52–53, Recommendations 2, 3.

18 See the interview with Marja Lehto in this issue of the *Review*: "Interview with Marja Lehto, Former International Law Commission Special Rapporteur on the Protection of the Environment in Relation to Armed Conflicts", *International Review of the Red Cross*, Vol. 105, No. 924, 2023.

The ICRC welcomes the finalization of the PERAC Principles and considers them to be complementary to the ICRC's efforts to strengthen the implementation of IHL rules protecting the natural environment.[19] The PERAC Principles complement the ICRC Guidelines in part because they have a broader temporal and material scope, drawing from branches of international law beyond IHL including international environmental law and international human rights law. Moreover, like the ICRC Guidelines, they also reflect that the IHL principles and rules on distinction, proportionality and precautions apply to the natural environment, and promote a recommendation to grant additional place-based protection to areas of particular environmental importance and fragility.[20] Ultimately, both the PERAC Principles and the ICRC Guidelines reinforce each other's core objective of urging States and parties to armed conflict to protect the environment for present and future generations.

Issues of law

Framed by this context of crises and momentum, the following section delves into four legal issues addressed by the ICRC Guidelines that are particularly salient to wartime environmental protection in 2023. It does not cover the IHL on this topic comprehensively (for example, it omits entirely certain rules in the Guidelines related to IHL's specific environmental protections, and weapons law); a fuller account can be found in the Guidelines themselves.

Issue 5: The protection of the natural environment by the general rules on the conduct of hostilities

The ICRC Guidelines begin with the understanding that the "natural environment" constitutes the natural world together with the system of inextricable interrelations between living organisms and their inanimate environment, in the widest sense possible.[21] By default, it is civilian in character.[22] This reflects the fact that IHL classifies everything that can be the subject of an attack in a binary manner: civilian objects are all objects which are not military objectives. There is no "grey zone" in which a part of the natural environment is neither a military objective nor a civilian object. Recognition of the civilian character of the natural environment is reflected in State practice,[23] as well as in PERAC Principles 13(3) and 14.

19 Statement by the International Committee of the Red Cross at the UN General Assembly, 77th Session, Sixth Committee, in ILC, *Report of the International Law Commission on the Work of Its Seventy-Third Session*, UN Doc. A/77/10, 26 October 2022, available at: www.un.org/en/ga/sixth/77/pdfs/statements/ilc/25mtg_icrc_1.pdf.

20 PERAC Principles, above note 16, Principles 4, 13(3), 14; ICRC Guidelines, above note 1, Rules 5–9, Recommendation 17.

21 For fuller detail, see ICRC Guidelines, above note 1, paras 15–17.

22 *Ibid.*, para. 18.

23 See ICRC Customary Law Study, above note 14, Vol. 1, Rule 43 and commentary, p. 143 (see https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule43, and the state practice thereto).

By virtue of its civilian character, the natural environment is protected by the general IHL rules governing the conduct of hostilities, and the interpretive guidance on these rules lies at the heart of the Guidelines' objective of better restraining the worst excesses of war wrought on the environment. Most quotidian and influential for contemporary conflicts are the protections provided to all parts of the natural environment as civilian objects by the IHL principles of distinction, proportionality and precaution. Without veering into wholesale repetition of the Guidelines' commentary, this section highlights some of the key interpretative guidance contained therein.

The principle of distinction – reflected in Rule 5 of the Guidelines – sets out that no part of the natural environment may be attacked unless it is a military objective. This does not mean it is always prohibited to direct an attack on any part of the natural environment; a distinct part thereof – for example, a specific cave – can nevertheless fulfil the definition of military objective according to the normal rules (para. 100). The distinct part of the natural environment in question must fulfill both prongs of the definition of a military objective, just as any object must do: it must, by its nature, location, purpose or use, make an effective contribution to military action, and its total or partial destruction, capture or neutralization, in the circumstances ruling at the time, must offer a definite military advantage. Questions are frequently raised as to how the definition might be fulfilled: regarding the first prong of the definition, the Guidelines give examples including a hill that may contribute effectively to the military action of enemy forces by location if it provides them with a vantage point over an adversary's camp, or the use of foliage in a specific forest area may contribute effectively to military action by providing concealment for a troop manoeuvre (para. 101). Regarding the second prong, the Guidelines caution that, for example, where a national park occupies a cherished place in a State's history and identity, attacking such a park may undermine national morale and political resilience – but this outcome is not a military advantage, so the national park cannot fulfil the definition of a military objective by this metric (para. 103). To give another example, a number of States consider that an area of land can fulfil the definition of military objective, and this position is widely accepted, including by the ICRC; for instance, IHL does not prohibit the use of mine-clearing line charges to make way for friendly forces through a field mined by the adversary, nor interdiction fire directed, for example, at a river crossing by which the adversary intends to move troops to mount an attack (para. 104). The Guidelines caution, however, that the general concept of an "area" must not be interpreted overly broadly such that, for example, a large expanse of forest is deemed to be a military objective simply because combatants are located in a small portion of it; only that portion of the forest which has been identified as directly contributing to military action will be liable to become a military objective, provided that the second prong of the definition is also fulfilled (para. 101).

Reflecting on the application of the principle of distinction to the natural environment, the ICRC Guidelines also address a number of common practices whereby militaries direct fire at or release a piece of ordnance on parts of the

natural environment in situations where such parts do not necessarily fulfil the definition of military objective. These include the calibration of artillery guns by firing a shell at empty open ground or a group of trees in order to improve accuracy, and fighter jets jettisoning unused pieces of ordnance in the ocean before returning to aircraft carriers in order to reduce the risk of accidents upon landing. The Guidelines explain that the ICRC does not consider the rule of distinction to outlaw these standard practices: even if such practices would amount to attacks in some circumstances, the Guidelines address these limited examples of widely held and uncontroversial practices in situations where the damage is minimal and is not the object of the operation as an exception to the rule (para. 105).

Rule 7 of the ICRC Guidelines sets out the rule of proportionality in attack: launching an attack against a military objective which may be expected to cause incidental damage to the natural environment which would be excessive in relation to the concrete and direct military advantage anticipated is prohibited. Clarity around how this applies to the environment has long been a preoccupation of the environmental community,[24] and is an issue to which the Guidelines' commentary (paras 114–122) seeks to respond. When assessing proportionality, the basic rule requires that parties to conflict must take into account incidental civilian harm, including to the natural environment, that is reasonably foreseeable based on an assessment of information from all sources available to them at the relevant time (paras 115–117). Of course, there is no precise formula for conducting proportionality assessments, and the assessment is highly fact-dependent, but there are nevertheless certain requirements. This obligation includes taking into account an attack's indirect effects on the natural environment (para. 117), and the scope of the obligation and the related question as to reasonable foreseeability will depend on an assessment of information from all sources available to the party at the relevant time, informed by past practices and empirical data (para. 118). As information regarding the long-term risks attendant to disruption of ecosystems increases, so too does the foreseeability of indirect effects, and incidental harm assessments must take such information into account (para. 118).

The weight given to various types of incidental civilian harm in a proportionality assessment will necessarily vary. For example, damage to the natural environment in the middle of an uninhabited desert will carry much less weight than damage to a natural water reservoir used by villagers for drinking or irrigation (para. 121). In other words, "all parts" of the natural environment are not equal for the purpose of proportionality assessments. An example of disproportionate incidental damage to the natural environment would be the burning of an entire forest to eliminate a single, small enemy camp of minor

24 In 2010, Bothe, Bruch, Diamond and Jensen identified the "lack of clarity about the practical issues of proportionality where environmental damage is collateral damage" as one of three challenges to protecting the environment in war: Michael Bothe, Carl Bruch, Jordan Diamond and David Jensen, "International Law Protecting the Environment during Armed Conflict: Gaps and Opportunities", *International Review of the Red Cross*, Vol. 92, No. 879, 2010, p. 578.

importance.[25] To the extent that it constituted damage incidental to an attack, many experts considered that the pollution arising from the burning of oil fields and the deliberate spilling of millions of gallons of oil into the sea during the 1990–91 Gulf War was excessive in relation to the military advantage that may have been anticipated (para. 122).

Rule 8 of the ICRC Guidelines sets out obligations of precaution. It provides that in the conduct of military operations, constant care must be taken to spare the civilian population, civilians and civilian objects, including the natural environment, and that all feasible precautions must be taken to avoid, and in any event to minimize, incidental loss of civilian life, injury to civilians and damage to civilian objects, including the natural environment. The Guidelines outline environmental factors to consider and examples of potential precautions that parties might take. The commentary also observes that there is bound to be some uncertainty as to the full impact of an attack on the environment and that the "precautionary principle" is of particular relevance to such an attack. In this respect, lack of scientific certainty as to the effects on the natural environment of certain military operations does not absolve a party to the conflict from taking precautions to avoid or minimize these effects (para. 124).

The meaning of the phrase "feasible precautions" is limited to those precautions which are practicable or practically possible, taking into account all circumstances ruling at the time, including humanitarian and military considerations (para. 129). Specifically with regard to incidental damage to the natural environment, the area expected to be affected and the scope of those effects, the fragility or vulnerability of the natural environment in that area, the expected severity of the damage and the expected duration of damage are elements of the humanitarian considerations to be taken into account in assessing the feasibility of a specific precaution (para. 129). Examples of precautions in attack given in the ICRC Guidelines include assessing the environmental impact of the weaponry to be used and using available alternative weaponry that reduces the risk of damage to specific parts of the natural environment concerned (para. 133); assessments of the potential environmental impact of an attack, including the expected consequences of the weapons and ammunition used; mapping when planning attacks in or around areas of major environmental importance or fragility, for example by reference to existing resources such as the World Heritage List or the International Union for Conservation of Nature's (IUCN) conservation databases (para. 134); and, when there is a choice, selecting the military objective the furthest from particularly vulnerable parts of the natural environment, such as underground aquifers, sensitive natural habitats or endangered species (para. 137).

25 Burning an entire forest may also raise issues under the prohibition of indiscriminate attacks (see notably Article 51(4)(c) of Additional Protocol I (AP I) and ICRC Guidelines Rule 6). Indeed, depending on how it is used, the effects of fire cannot be controlled in time and space: see ICRC Guidelines, above note 1, para. 112 and footnotes therein.

Today, militaries engage in a range of good practices to assess and minimize environmental damage as they conduct their operations in armed conflict. At the 2023 expert meeting of States on IHL and the protection of the environment in armed conflicts, delegations shared examples addressed under Issue 10 below.[26] To name just two examples of relevant military doctrine and instruction, the Joint NATO Doctrine for Environmental Protection during NATO-Led Military Activities contains a range of measures designed to assist militaries in assessing potential environmental damage and taking feasible steps to reduce it,[27] and the Instruction by the US Chairman of the Joint Chiefs of Staff on *No-Strike and the Collateral Damage Estimation Methodology* states that "[t]he [collateral damage estimation methodology] encompasses the joint standards, methods, techniques, and processes for a commander to conduct [collateral damage estimation] and mitigate unintended or incidental damage or injury to civilian or noncombatant persons or property or the environment".[28] Military practices like these are crucial to putting IHL rules into practice; more are needed across armed forces worldwide.

The ICRC Guidelines also acknowledge a counter view among certain States under which parts of the natural environment that do not qualify as military objectives are not necessarily civilian objects and thus do not necessarily have to be considered in distinction, proportionality and precaution analyses. According to this "anthropocentric" view, a part of the natural environment would only constitute a civilian object when it is used or relied upon by civilians for their health or survival (paras 19–21). By contrast, in the ICRC's view, IHL protects all parts of the natural environment *per se*, even if damaging them would not necessarily harm human health or survival in a reasonably foreseeable manner for the purposes of IHL assessments (para. 19). This approach recognizes the intrinsic dependence of all humans on the natural environment, as well as the still relatively limited knowledge of the effects of armed conflict on the complex relationship between civilian life and the environment. Moreover, it is scientifically unsound to argue that in the context of the modern environmental crisis, and faced with contemporary knowledge of the interlinkages between planetary and human health, damage to the environment during hostilities will frequently have no foreseeable impact on the health and survival of civilian populations.[29] The ICRC's views on this point

26 Chair's Summary, above note 11, pp. 9–12.

27 NATO, *Joint NATO Doctrine for Environmental Protection during NATO-Led Military Activities*, NATO Allied Joint Environmental Protection Publication, NATO STANAG 7141, AJEPP-4, Edition B, Version 1, March 2018 (Joint NATO Doctrine).

28 Chairman of the Joint Chiefs of Staff Instruction, *No-Strike and the Collateral Damage Estimation Methodology*, CJCSI 3160.01, 13 February 2009, Enclosure D, Joint Methodology for CDE, 1(c).

29 Joyeeta Gupta *et al.*, "Communicating the Health of the Planet and Its Links to Human Health", *The Lancet: Planetary Health*, Vol. 3, No. 5, 2019, pp. 1–2; Joe McCarthy, "'Planetary Health': How the Environment and Global Health Are Interconnected", *Global Citizen*, 7 April 2022, available at: www.globalcitizen.org/en/content/planetary-health-explainer/. The UN Secretary-General has observed that the human right to life is meaningless if the ecosystems that sustain humankind do not exist: *Report of the Secretary-General: Harmony with Nature*, UN Doc. A/75/266, 28 July 2020, para. 41.

will be further elaborated in a piece by Vanessa Murphy *et al.* in a forthcoming issue of the *Review*.[30]

Issue 6: Prohibition of widespread, long-term and severe damage to the natural environment

Beyond the general IHL rules, including those just addressed, are those set out in Part I of the ICRC Guidelines granting specific protection to the natural environment as such.[31] The most emblematic of these are found in the 1976 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD Convention) and in Articles 35(3) and 55 of Additional Protocol I (AP I). These were adopted with the Vietnam War as a backdrop, marking a historic step towards protecting the environment in war. This section spotlights key components of the resulting prohibition on using methods or means of warfare that are intended, or may be expected, to cause widespread, long-term, and severe damage to the natural environment, restated in the Guidelines' Rule 2.[32] The prohibition is also the subject of PERAC Principle 13(2).

Citing the International Court of Justice's Advisory Opinion on the *Legality of the Threat of the Use of Nuclear Weapons*, the ICRC Guidelines underline that this rule is a "powerful constraint"; it provides specific and direct protection to the natural environment, beyond IHL's general protections (para. 49). Referring to Article 35(3) of AP I, ILC Special Rapporteur Marja Lehto noted similarly that this rule "has proved effective in preventing the kind of catastrophic damage it was intended to address" since the 1990–91 Gulf War.[33] It is worth highlighting, however, that the strength of Rule 2's prohibition is its "absolute ceiling of permissible destruction" (para. 49).[34] It prohibits environmental damage above this ceiling, even where a part of the natural environment could otherwise be lawfully targeted or incur damage arising from a lawful application of the principle of proportionality. In other words, all environmental damage meeting the required threshold is prohibited, regardless of considerations of military necessity or proportionality. It is for this reason that a high – cumulative – threshold of "widespread, long-term and severe" damage is required to trigger this rule.

30 Vanessa Murphy, Laurent Gisel, Helen Obregón Gieseken, Abby Zeith and Lindsey Cameron, "The Civilian Character of the Natural Environment: A Response to Keinan and Rosenthal", *International Review of the Red Cross*, forthcoming.

31 For further detail, see ICRC Guidelines, above note 1, pp. 29–47.

32 ICRC Customary Law Study, above note 14, Vol. 1, first sentence of Rule 45, p. 151 (see https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule45 and related practice). For more on the customary status of this rule, persistent objectors and diverging views see ICRC Guidelines, above note 1, paras 47–48.

33 Marja Lehto, *Third Report on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/750, 16 March 2022 (reissued for technical reasons on 26 April 2022), p. 58, in a discussion on the customary nature of Articles 35(3) and 55 of AP I.

34 ICRC Guidelines, above note 1, para. 49, citing US Army, *Operational Law Handbook*, 2015, p. 333; see also para. 116. See also M. Lehto, above note 33, p. 54.

The absolute threshold's "widespread, long-term and severe" parameters have long preoccupied attention. Although used in AP I, the terms are not defined therein, nor in its negotiating history or commentaries. Uncertainty around their meaning and the need for further clarity have captured legal discussions on enhancing environmental protection in war.[35] Taking stock of existing interpretive sources, the ICRC Guidelines' commentary on Rule 2 sets out several elements to inform a contemporary understanding of "widespread", "long-term" and "severe", a few of which are highlighted here.

The Guidelines begin with the terms' drafting history. During the AP I negotiations, a number of States understood that the interpretation of the Protocol's terms was different from the similar – but non-cumulative – terms used in the ENMOD Convention ("widespread, long-lasting or severe", paras 52–53).[36] However, little clarity was provided on how the terms in the ENMOD Convention and AP I differ, except for the views of some delegations on "long-term", and no official position was adopted. Since then, awareness of the need to limit environmental damage has continued to grow, together with international environmental law's evolution (para. 54). We also know more about the connectedness of different parts of the natural environment, how damage is caused, and climate risks and shocks.[37] What is certain is that in assessing the degree to which damage is widespread, long-term and severe, such current knowledge must be taken into account by those employing methods or means of warfare.[38] This could conceivably lead to a finding that a previous use of a method or means of warfare had consequences that – while not expected at the time – could meet the required threshold of harm if used today (para. 55). Beyond these touchstones, other elements, including UNEP's recommendation to use the ENMOD Convention precedents as a starting point, should inform a contemporary understanding of "widespread, long-term and severe".[39]

35 See, for example, UNEP, above note 17, p. 52; ICRC, *Strengthening Legal Protection for Victims of Armed Conflicts*, Report Submitted to the 31st International Conference of the Red Cross and Red Crescent, Geneva, October 2011, p. 15; Karen Hulme, *War Torn Environment: Interpreting the Legal Threshold*, Martinus Nijhoff, Leiden, 2004; M. Bothe *et al.*, above note 24, p. 576.

36 The drafters of the 1976 ENMOD Convention adopted "Understandings" of the terms used in the Convention, noting that the interpretation given is for the purposes of that treaty and without prejudice to other international agreements: UN General Assembly, *Report of the Conference of the Committee on Disarmament*, Vol. 1, General Assembly Official Records, 31st Session, Supp. 27, UN Doc. A/31/27, 1976, p. 91.

37 Scholars are beginning to examine the links between climate change and IHL: see Karen Hulme, "Climate Change and International Humanitarian Law", in Rosemary Rayfuse and Shirley V. Scott (eds), *International Law in the Era of Climate Change*, Edward Elgar, Cheltenham and Northampton, MA, 2012. See also the article by Catherine-Lune Grayson *et al.* in this issue of the *Review*: Catherine-Lune Grayson, Amir Khouzam, Nishanie Jayamaha and Stephanie Julmy, "The Climate and Environment Charter for Humanitarian Organizations: Strengthening the Humanitarian Response to the Climate and Environment Crises", *International Review of the Red Cross*, Vol. 105, No. 924, 2023. See, further, the article by Stavros-Evdokimos Pantazopoulous in a forthcoming edition of the *Review*: Stavros-Evdokimos Pantazopoulous, "Protecting the Environment in Armed Conflict: The Legal and Policy Framework of the Future", *International Review of the Red Cross*, forthcoming.

38 Similarly, see ILC, *Report of the International Law Commission on the Work of Its Seventy-Third Session*, UN. Doc. A/77/10, 2022, Chap. V, "Protection of the Environment in Relation to Armed Conflicts" (ILC Commentaries on the Draft PERAC Principles), commentary on Draft Principle 13(2), para. 9.

39 UNEP, above note 17, p. 52. See also ICRC Guidelines, above note 1, paras 56, 60–61, 64, 67, 72.

Turning to the ICRC's views on each term, the Committee considers that "widespread" should be understood as referring to damage extending to "several hundred square kilometres", relying *inter alia* on the ENMOD Convention's understanding and subsequent practice to this effect (para. 60).[40] As the only existing legal definition of similar terms, using this base avoids the arbitrary attribution of a threshold that has never been fixed; the only understanding of "widespread" in AP I's *travaux préparatoires* is that it contemplates the "scope or area affected" (para. 56). The ICRC understands the "area affected" as that where damage is intended or may be expected to occur (para. 57). This includes damage caused directly in the geographical area where the method or means of warfare is used, but also – and equally relevant – indirect effects that spread or materialize beyond that area, provided they are intended or may be expected (para. 57). For example, the burning of oil wells during the 1990–91 Gulf War, which caused significant emissions of sulphur dioxides, nitrous oxide and carbon dioxide and the deposit of soot on more than half of Kuwait (roughly 8,000 square kilometres), has been cited as probably having satisfied the widespread test. Cumulatively, environmental damage to numerous smaller areas may also qualify as "widespread". Finally, contemporary knowledge of the effects of environmental damage, including its trans-regional nature, can serve to further inform interpretation of this term (para. 58).

The term "long-term" would cover damage somewhere between the range of that not considered to be short-term or temporary, such as artillery bombardment, and that with impacts in the range of years (possibly a scale of ten to thirty years) (para. 63). As outlined in the ICRC Guidelines (paras 61–63), the AP I *travaux préparatoires* provide indications as to the meaning of "long-term"; the Biotope Group referred to "a significant period of time, perhaps for ten years or more",[41] while some representatives referred to twenty or thirty years "as being a minimum".[42] At the opposite end of the spectrum, the negotiating history also shows that short-term environmental damage was not intended to be covered. Ultimately, however, no official position was adopted on the meaning of "long-term", and the Guidelines provide other touchstones that should be considered to inform its meaning so that this rule can be concretely applied (para. 64). In contrast to the ENMOD Convention precedent (i.e., "a period of months, or approximately a season"), the Guidelines state that the threshold would likely only be met when the effects of damage are felt or may be expected to be felt over a period of years and would have to be greater than only "a season", given that AP I provisions sought to cover damage or disruption to ecosystems on a large scale. Importantly, in addition to the direct effects of a given method or means of warfare, the duration of the indirect (or reverberating)

40 UN General Assembly, above note 36, p. 91.

41 *Report of the Chairman of the Group "Biotope"*, CDDH/III/GT/35, 11 March 1975, para. 5, reprinted in Howard S. Levie, *Protection of War Victims: Protocol I to the 1949 Geneva Conventions*, Vol. 3, Oceana, New York, 1980, para. 6.

42 *Official Records of the Diplomatic Conference of Geneva of 1974–1977*, Vol. 15, CDDH/215/Rev. I, Federal Political Department, Bern, 1978, para. 27.

effects should also be considered (paras 65–66). For instance, we know today that serious environmental contaminants and hazardous substances can remain in the natural environment for lengthy periods of time and cause – and continue to cause – harm to species, including humans. Taking these factors into account, damage not initially considered to fall under the "long-term" test could satisfy it today based on contemporary knowledge, even against a duration of thirty years.

Finally, turning to "severe", this term should be understood to cover disruption or damage to an ecosystem or harm to the health or survival of the population on a large scale, with normal damage caused by troop movements and artillery fire in conventional warfare generally falling outside the scope of this prohibition (para. 72). In this respect, AP I's negotiating history provides some insight, indicating an aim to prevent damage of a nature to significantly disrupt an ecosystem (para. 68). With reference specifically to the term in Article 55(1) of AP I, a factor to consider in assessing the severity of damage was if it "would be likely to prejudice, over a long term, the continued survival of the population or would risk causing it major health problems" (para. 69).[43] Increased contemporary knowledge of both the direct and indirect effects of a given method or means of warfare on the natural environment will be key, including those that may take a long time to manifest, such as teratogenic, mutagenic and carcinogenic effects (para. 70). Regarding precedent, effects resulting from the burning of the oil wells during the 1990–91 Gulf War have been cited as having met the "severe" test. The interdependency of elements of the natural environment, as well as of the natural environment and the population, must also be considered (para. 71). Finally, UNEP recommends that the ENMOD Convention understanding of "severe" (i.e., "serious or significant disruption or harm to human life, natural and economic resources or other assets") should serve as the minimum basis for the development of a clearer definition (para. 72). Based on this understanding, effects "involving serious or significant disruption or harm to human life" or to "natural resources" would be covered. At least to the extent that effects on "economic resources or other assets" also result in disruption or damage to the ecosystem or harm to the health or survival of the population, these should also be considered.

Issue 7: Accountability for war crimes that concern the natural environment

IHL rules set out in the ICRC Guidelines and obligations under international criminal law are the international legal basis for wartime environmental damage criminal accountability. Despite limited examples of individual accountability for war crimes concerning the natural environment to date,[44] there are existing

43 *Ibid.* Although impact on the health or survival of the population is the focus of Article 55(1), this is not to say that environmental damage must have this foreseeable effect in order to qualify as severe (though such effects on the population may of course be involved at this threshold). Article 35(3) differs from Article 55 in this respect. For more detail, see ICRC Guidelines, above note 1, paras 69, 73–75.

44 See *ibid.*, para. 318, which also cites examples of successful prosecutions.

avenues that international and domestic courts can – and should – consider more systematically. To shed light on these possibilities, this section focuses on obligations relating to the repression of war crimes that concern the natural environment.[45] It also briefly addresses how ongoing efforts related to the crime of "ecocide" could overlap with IHL regarding serious environmental damage in armed conflict.

Rule 28 of the ICRC Guidelines restates general IHL obligations on criminal accountability for war crimes, including those in the 1949 Geneva Conventions and AP I grave breaches provisions, in the 1998 Rome Statute of the International Criminal Court (ICC) as applicable, and in customary international law (para. 312) that are relevant for the protection of the natural environment.[46] In its commentary on Draft PERAC Principle 3, the ILC likewise reaffirms States' obligation to investigate war crimes that concern the environment, such as "the pillaging of natural resources, and the extensive destruction and appropriation of property that is not justified by military necessity and is carried out wantonly and unlawfully".[47]

Among these war crimes, the most prominent – of considerable historical significance as the first to establish individual liability to cause harm to the natural environment as such, without requiring harm to be caused to humans – is Article 8 (2)(b)(iv) of the Rome Statute (para. 313).[48] However, other war crimes not specific to the natural environment can also provide protection to certain parts of it and open the door for criminal accountability (para. 314).[49] This is the approach suggested by the ICC Office of the Prosecutor's recommendation that "crimes that are committed by means of, or that result in, inter alia, the destruction of the environment, the illegal exploitation of natural resources or the illegal dispossession of land" be considered in case selection and prioritization.[50] The ICRC Guidelines' commentary provides an illustrative list of relevant Rome

45 For other rules related to respect, implementation and dissemination of IHL rules protecting the natural environment, see *ibid.*, Part IV.

46 For details, see *ibid.*, paras 312–318.

47 ILC Commentaries on the Draft PERAC Principles, above note 38, commentary on Draft Principle 3(1), para. 10.

48 Note, however, that there are views that this Rome Statute provision should be amended, including because environmental issues remain secondary to interests of military importance. See, for example, Jessica C. Lawrence and Kevin Jon Heller, "The Limits of Article 8(2)(b)(iv) of the Rome Statute, the First Ecocentric Environmental War Crime", *Georgetown International Environmental Law Review*, Vol. 20, No. 1, 2007; Steven Freeland, *Addressing the Intentional Destruction of the Environment during Warfare under the Rome Statute of the International Criminal Court*, Intersentia, Cambridge, 2015, p. 206. For an overview of some of these views, see Matthew Gillett, *Prosecuting Environmental Harm before the International Criminal Court*, Cambridge University Press, Cambridge, 2022, Chap. 6, section 6.3.2.

49 See also ILC Commentaries on the Draft PERAC Principles, above note 38, commentary on Draft Principle 13(2), para. 10. For views on how other Rome Statute war crimes (as well as crimes against humanity and genocide) can be used to address environmental wartime damage, see S. Freeland, above note 48, pp. 213–214; Mark A. Drumbl, *Accountability for Property Crimes and Environmental War Crimes: Prosecution, Litigation, and Development*, International Center for Transitional Justice, New York, November 2009, p. 8; M. Gillett, above note 48, Chap. 2, section 2.3.3.3.

50 ICC Office of the Prosecutor, *Policy Paper on Case Selection and Prioritisation*, 15 September 2016, pp. 13–14, paras 40–41.

Statute war crimes that could be further considered by the ICC, as well as by national courts in their own contexts (paras 314–316).

Looking beyond existing crimes, since the 1970s there have also been initiatives to recognize ecocide as an international crime.[51] More generally, scholars have called for amendments to the Rome Statute or suggested other ways to strengthen criminal accountability for environmental damage.[52] Efforts to criminalize ecocide have accelerated in recent years, with proposals made at the ICC Assembly of States Parties to include it as a fifth category of crimes in the Rome Statute[53] and the adoption of a draft legal definition of ecocide by an international expert panel.[54]

Without opining on criminal responsibility for peacetime environmental harm, the ICRC notes that the expert panel's proposed crime of ecocide would apply both in peacetime and in war. Thus, certain elements of the ecocide definition could overlap with – and have an opportunity to cross-fertilize – existing IHL obligations and war crimes. This is also (and already) the case for domestic provisions on ecocide.[55] In particular, the crime of ecocide

51 See, for instance, Richard A. Falk, "*Environmental Warfare and Ecocide: Facts, Appraisal and Proposals*", *Revue Belge de Droit International*, Vol. 9, No. 1, 1973. For a brief overview of some historical landmarks, see M. Gillett, above note 48, Chap. 6, section 6.3.2.3.

52 See M. Gillett, above note 48, Chap. 6, section 6.3.3 on the establishment of an International Court for the Environment; S. Freeland, above note 48, pp. 222, 226, 245 on amending the Rome Statute with Article 8*ter*, recognizing a standalone crime against the environment.

53 Written Statement of the Republic of Maldives, 18th Session of the Assembly of State Parties to the Rome Statute of the International Criminal Court, 3 December 2019, p. 2, available at: https://asp.icc-cpi.int/sites/asp/files/asp_docs/ASP18/GD.MDV.3.12.pdf; Statement of the Republic of Vanuatu, 18th Session of the Assembly of State Parties to the Rome Statute of the International Criminal Court, 3 December 2019, pp. 3–4, available at: https://asp.icc-cpi.int/sites/asp/files/asp_docs/ASP18/GD.VAN.2.12.pdf. Belgium voiced the same call in 2020: see Statement of the Kingdom of Belgium, 19th Session of the Assembly of State Parties to the Rome Statute of the International Criminal Court, 14–16 December 2020, p. 4, available at: https://asp.icc-cpi.int/sites/asp/files/asp_docs/ASP19/GD.BEL.14.12.pdf. During the 20th and 21st sessions of the ICC Assembly of State Parties, New Zealand and Samoa encouraged future discussions on ecocide, Belgium supported the criminalization of ecocide, and Finland suggested "making better use of the Rome Statute as it stands": see Statement of the Kingdom of Belgium, 20th Session of the Assembly of State Parties to the Rome Statute of the International Criminal Court, 6 December 2021, p. 2, available at: https://asp.icc-cpi.int/sites/asp/files/asp_docs/ASP20/ASP20.GD.BEL.07.12.pdf; Statement of the Independent State of Samoa, 20th Session of the Assembly of State Parties to the Rome Statute of the International Criminal Court, 6–11 December 2021, p. 2, available at: https://asp.icc-cpi.int/sites/asp/files/asp_docs/ASP20/ASP20.GD.SAM.06.12.pdf; Statement of New Zealand, 21st Session of the Assembly of State Parties to the Rome Statute of the International Criminal Court, December 2022, p. 2, available at: https://asp.icc-cpi.int/sites/asp/files/2022-12/ASP21.GD_.NZL_.05.12.pdf; Statement of the Republic of Finland, 20th Session of the Assembly of State Parties to the Rome Statute of the International Criminal Court, 6 December 2021, p. 3, available at: https://asp.icc-cpi.int/sites/asp/files/asp_docs/ASP20/ASP20.GD.FIN.06.12.pdf.

54 Stop Ecocide International, *Independent Expert Panel for the Legal Definition of Ecocide: Commentary and Core Text*, June 2021, available at: https://tinyurl.com/4yrt7jkt. The draft definition has been the object of considerable discussion: see, for example, Kevin J. Heller, "Skeptical Thoughts on the Proposed Crime of "Ecocide" (That Isn't)", *Opinio Juris*, 23 June 2021, available at: https://opiniojuris.org/2021/06/23/skeptical-thoughts-on-the-proposed-crime-of-ecocide-that-isnt/; Kai Ambos, "Protecting the Environment through International Criminal Law?", *EJIL: Talk!*, 29 June 2021, available at: www.ejiltalk.org/protecting-the-environment-through-international-criminal-law/.

55 For examples of national laws criminalizing ecocide, see references in ICRC Guidelines, above note 1, fn. 208.

could provide elements to clarify and interpret IHL's "widespread, long-term and severe" threshold if similar terms are adopted as part of the ecocide definition, particularly given the comparable aim of the AP I provisions to cover large-scale damage or disruption to ecosystems.[56] Practice related to ecocide already aids interpretation of the type of "destruction" covered by IHL's prohibition on using the destruction of the natural environment as a weapon, understood to mean serious environmental damage like that observed in the 1990–91 Gulf war, or, indeed "ecocide" (paras 77–79). In turn, acts of ecocide could conceivably be informed by reference to violations of existing IHL rules, including the principles of distinction and proportionality (para. 77). Considering the above, beyond the potential to address wartime environmental damage through existing war crimes, domestic efforts related to accountability for ecocide could also contribute to greater accountability for IHL violations in the future.

Issue 8: Protected environmental zones in armed conflict

We now turn from prospects for accountability to hopes for prevention of environmental damage in wartime. A future frontier for improved environmental protection in conflict is the pre-emptive establishment of protected zones to spare areas of particular environmental importance or fragility from hostilities. Because such zones often contain unique ecosystems and endangered species, in some cases damage to them could be irreversible – once they're gone, they're gone forever – or take decades to repair.[57] Damage is caused not only by hostilities but also by the dynamics of conflict economies and the erosion of governance systems. Species are killed and injured by landmines, flora is cleared to make way for military operations, poaching spikes as park guards flee violence, and conservation is disrupted.[58] Because of their unique value, hopes for preventative measures have recently centred around protected zones. Certainly, their establishment would be limited territorially, but the rationale is to prioritize the most valuable environments – some protection is better than no protection.

56 See discussion on the "widespread, long-term and severe" threshold under Issue 6 above.

57 IUCN, *Conflict and Conservation*, Nature in a Globalised World Report No. 1, Gland, 2021, pp. 11–17; International Law and Policy Institute, *Protection of the Natural Environment in Armed Conflict: An Empirical Study*, Report No. 12/2014, 2014, p. 6; UNEP, *The Mesopotamian Marshlands: Demise of an Ecosystem: Early Warning and Assessment Technical Report*, Nairobi, 2001, p. 34; UNEP, *UNEP in Iraq: Post-Conflict Assessment, Clean-Up and Reconstruction*, Nairobi, 2007, pp. 17–18.

58 For examples of these impacts, see Scott Schlossberg, Michael J. Chase and Curtice R. Griffin, "Poaching and Human Encroachment Reverse Recovery of African Savannah Elephants in South-East Angola Despite 14 Years of Peace", *PLoS ONE*, Vol. 13, No. 3, 2017, p. 10, reporting that mines laid in Angolan national parks killed African elephants long after the Angolan conflict had ended; Sudan Government, Ministry of Environment and Tourism, *The Sudan's National Biodiversity Strategy and Action Plan*, May 2020, p. 40, available at: www.cbd.int/doc/world/sd/sd-nbsap-01-p1-en.pdf, reporting that a large proportion of diversity losses in plants and animals are caused directly or indirectly by war, and that heavy military machinery has significant physical effects on vegetation cover; Rene L. Beyers *et al.*, "Resource Wars and Conflict Ivory: The Impact of Civil Conflict on Elephants in the Democratic Republic of Congo – the Case of the Okapi Reserve", *PLoS ONE*, Vol. 6, No. 11, 2011; UNEP, *The Democratic Republic of the Congo: Post-Conflict Environmental Assessment: Synthesis for Policy Makers*, Nairobi, 2011, p. 28.

The ICRC Guidelines recommend that areas of particular environmental importance or fragility be identified and designated as demilitarized zones.[59] Based on multiple IHL rules (paras 203–213), Recommendation 17 provides that parties to a conflict should endeavour to conclude agreements providing additional protection to the natural environment, and under this rubric proposes establishing a demilitarized zone – in peacetime or during conflict – to exclude fighters and military objects from a prioritized area.[60] This would prevent parts of those zones from becoming military objectives, and also reduce the risk of them suffering incidental damage as a result of attacks against military objectives being located within them. The rationale behind express, deliberate designation is to offer military commanders the clarity needed to guide operational planning, such that they avoid conducting military operations within the zones or take them into account when applying the IHL principles of proportionality and precaution.[61] The Guidelines also note that refraining from locating troops or military material in important or fragile areas is one way precautions could be taken to protect the natural environment against the effects of attacks.[62]

There is re-emerging support for this form of voluntary agreement. With the same objective of enhancing area-based protection, Principle 4 of the PERAC Principles provides that "[s]tates should designate, by agreement or otherwise, areas of environmental importance as protected zones in the event of an armed conflict, including where those areas are of cultural importance". Principle 18 protects such areas from attack in addition to any additional agreed protections.[63] The UN Secretary-General made a similar call in 2022,[64] and the practicality of such protection is subject to continued refinement in legal and environmental scholarship.[65]

59 ICRC Guidelines, above note 1, Recommendation 17, p. 82.

60 *Ibid.*, Recommendation 17, para. 208. Notably this does not exclude other conservation-related protections afforded to protected environmental areas under other bodies of law, which may apply concurrently.

61 The benefits of this clarity for the military planning process are also observed in the ILC Commentaries on the Draft PERAC Principles, above note 38, commentary on Draft Principle 18, para. 5. See also ICRC Guidelines, above note 1, commentary on Rule 8, pp. 59, para. 129, and p. 60, para. 134; ILC Commentaries on the Draft PERAC Principles, above note 38, commentary on Draft Principle 13, para. 7.

62 ICRC Guidelines, above note 1, paras 144–145; ICRC Customary Law Study, above note 14, Vol. 1, Rule 22 and commentary, p. 68 (see https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule22 and related practice); AP I, Art. 58(c).

63 PERAC Principles, above note 16, Principle 18.

64 In 2022, the UN Secretary-General called for "designating areas of particular environmental importance or fragility as demilitarized zones" in his annual report on the protection of civilians in armed conflict: *Protection of Civilians in Armed Conflict: Report of the Secretary-General*, UN Doc. S/2022/381, 10 May 2022, p. 19.

65 See the articles by Britta Sjöstedt and Karen Hulme and by Elaine Hsiao *et al.* in this issue of the Review: Britta Sjöstedt and Karen Hulme, "Re-evaluating International Humanitarian Law in a Triple Planetary Crisis: New Challenges, New Tools", *International Review of the Red Cross*, Vol. 105, No. 924, 2023; E. Hsiao *et al.*, above note 4. See also e.g. M. Bothe *et al.*, above note 24, p. 577; Michael Bothe, "Protection of the Environment in Relation to Armed Conflicts", in Dieter Fleck (ed.), *The Handbook of International Humanitarian Law*, Oxford University Press, Oxford, 2021, p. 344; Alice Louise Bunker, "Protection of the Environment during Armed Conflict: One Gulf, Two Wars", *Review of European, Comparative and International Environmental. Law*, Vol. 13, No. 2, 2004, p. 205; Karen

This recommendation is far from new, but its feasibility is improving. Since the 1970s, several proposals have sought to create a system of area-based protection for zones of particular environmental importance or fragility in armed conflict. A draft article to protect publicly recognized nature reserves was proposed during the negotiation of the 1977 Additional Protocols, but was not included in the final text.[66] The idea surfaced again in the expert meetings that led to the ICRC's 1994 Guidelines,[67] and the 1994 *San Remo Manual on International Law Applicable to Armed Conflicts at Sea* encourages parties to the conflict to agree that no hostile actions will be conducted in marine areas containing rare or fragile ecosystems or depleted, threatened or endangered species.[68] In 1996, the International Council of Environmental Law (ICEL) and IUCN Commission on Environmental Law developed a Draft Convention on the Prohibition of Hostile Military Activities in Internationally Protected Areas,[69] and in 2009 UNEP called for "[a] new legal instrument granting place-based protection for critical natural resources and areas of ecological importance during international and non-international armed conflicts".[70]

The implementation of this recommendation by warring parties has so far stumbled due to three hurdles: selection criteria for relevant areas, objectivity of designation (to avoid strategic misuse of these areas to impede adversary military action), and the question of how to secure mutual agreement that selected areas be respected.[71] The first two hurdles could be overcome via recourse to the areas objectively determined under multilateral environmental agreements (MEAs); the ICRC Guidelines give an example of natural heritage sites designated under the World Heritage Convention, among other options.[72] The PERAC Principles

Hulme, "Armed Conflict and Biodiversity", in Michael Bowman, Peter Davies and Edward Goodwin (eds), *Research Handbook on Biodiversity and the Law*, Edward Elgar, Cheltenham and Northampton, MA, 2016, p. 259; Britta Sjöstedt, *The Role of Multilateral Environmental Agreements: A Reconciliatory Approach to Environmental Protection in Armed Conflict*, Hart, Oxford and New York, 2020, p. 178.

66 Draft Article 48*ter* provided that "[p]ublicly recognized nature reserves with adequate markings and boundaries *declared as such to the adversary* shall be protected and respected except when such reserves are used specifically for military purposes": Yves Sandoz, Christophe Swinarski and Bruno Zimmermann (eds), *Commentary on the Additional Protocols*, ICRC, Geneva, 1987, paras 2138–2139 (emphasis added).

67 See ICRC, *Meeting of Experts on the Protection of the Environment in Time of Armed Conflict, Geneva, 27–29 April 1992: Report on the Work of the Meeting*, Geneva, 1992, pp. 57–61 and Annex 3; ICRC, *Meeting of Experts on the Protection of the Environment in Time of Armed Conflict, Geneva, 25–27 January 1993: Report on the Work of the Meeting*, Geneva, 1993, pp. 50–54 and Annex 5.

68 Louise Doswald-Beck (ed.), *San Remo Manual on International Law Applicable to Armed Conflicts at Sea*, Cambridge University Press, Cambridge, 1995, Art. 11, and commentary thereto, p. 82.

69 IUCN and ICEL, *Draft Convention on the Prohibition of Hostile Military Activities in Internationally Protected Areas*, 1996, annexed to Wolfgang E. Burhenne, "The Prohibition of Hostile Military Activities in Protected Areas", *Environmental Policy and Law*, Vol. 27, No. 4, 1997, pp. 375–376.

70 UNEP, above note 17, p. 54.

71 Observations on barriers are also made in K. Hulme, above note 65, p. 259; see also *Official Records of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts, Geneva (1974–1977)*, Vol. 14, CDDH/III/SR.38, Federal Political Department, Bern, 1978, pp. 406–407, statements by the representatives of the Netherlands, Switzerland, the USSR and France.

72 ICRC Guidelines, above note 1, Recommendation 17, para. 208.

encourage the same recourse to MEAs.[73] This is attractive because the listing or designation of environmental areas under MEAs is typically reviewed or decided by an objective expert body, thereby insulating the process from manipulation by a party to armed conflict and building in some degree of ecological value (criteria varying according to the given MEA). This might help with the first two hurdles, but with respect to the third hurdle – securing mutual agreement between warring parties to designate and respect these zones – the Guidelines note that establishment in peacetime is one manner in which this could be achieved, and reiterate that some form of multilateral effort is likely the best way to do so systematically.[74] Demilitarizing such zones in time of peace would better enable States to plan and take preparatory measures to abide by the protected character of the zones once an armed conflict breaks out. Technical aspects that risk being neglected, practically unfeasible or politically unpalatable at the onset of an armed conflict have greater likelihood of being established as part of a preventive, rather than reactive, approach.

Finally, the feasibility of establishing such zones will require political will, and this is likely to remain a significant impediment – but there is some good practice from which to draw inspiration.[75] For example, national law on nature conservation in the Democratic Republic of the Congo provides that "[a]ny protected area enjoys, in times of peace as well as in times of armed conflict, the necessary status of neutrality and special protection against any act likely to violate its integrity and compromise the basic principles of conservation".[76] The Congolese government's conservation department has communicated with non-State armed groups regarding the maintenance of conservation efforts and the protection of national parks, with support from conservation organizations and UNESCO.[77] Some military manuals and guidance also feature encouragement to identify relevant zones: New Zealand's *Manual of Armed Forces Law* provides that commanders are, wherever feasible, to avoid conducting combat operations in areas containing rare or fragile ecosystems,[78] and Denmark's military manual identifies certain areas of natural heritage under the World Heritage Convention as examples of outstanding universal value that parties to a conflict could protect against the effects of armed conflict via mutual agreement.[79] The *Environmental Guidebook for Military Operations* published by Finland, Sweden and the United

73 ILC Commentaries on the Draft PERAC Principles, above note 38, commentary on Draft Principle 4, para. 5, making reference to the creation of protected areas under the Convention on Biological Diversity, the Montreux Records established by the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), and the List of World Heritage in Danger under the Convention Concerning the Protection of the World Cultural and Natural Heritage.

74 ICRC Guidelines, above note 1, Recommendation 17, paras 209–210.

75 See also Issue 10 below.

76 Democratic Republic of the Congo, Law No. 14/003, 11 February 2015, Arts 42, 43.

77 For further details, see James Shambaugh *et al.*, *The Trampled Grass: Mitigating the Impacts of Armed Conflict on the Environment*, Biodiversity Support Program, Washington, DC, 2001, p. 48.

78 New Zealand, *Manual of Armed Forces Law*, Vol. 4: *Law of Armed Conflict*, 2nd ed., DM 69, August 2017, para. 14.11.3.

79 Denmark, *Military Manual on International Law Relevant to Danish Armed Forces in International Operations*, 1st ed., September 2016, pp. 219–220.

States in 2008 suggests collecting information including whether there are protected areas or rare species within or in the vicinity of a military base.[80] The Joint NATO Doctrine for Environmental Protection during NATO-Led Military Activities provides several guidelines to which commanders should, where practicable, adhere,[81] one of which includes identifying characteristics of the environment such as "natural and cultural resources", the "presence of endangered species and critical habitats" and the "presence of birds or bird migration routes".[82] Another provides for the identification of potential environmental impacts caused by military activities on wetlands and biological diversity, and the endangerment of natural and cultural resources.[83] In sum, practice and potential exists, but political will remains an open question.

Issues of practice

Issue 9: Compliance with IHL protecting the natural environment by non-State armed groups

Unlike their 1994 predecessor, the 2020 ICRC Guidelines expressly aim to serve as a reference for all parties to armed conflict, including non-State armed groups (para. 11). The majority of the IHL obligations contained in the Guidelines bind non-State armed groups: of the thirty-two rules and recommendations, at least twenty-two – and arguably twenty-five – contain provisions binding on such groups in certain conflicts.[84] For example, non-State armed groups are prohibited from attacking a part of the natural environment unless it is a military objective (Rule 5). They are prohibited from launching an attack against a military objective expected to cause incidental damage to the natural environment excessive in relation to the concrete and direct military advantage anticipated (Rule 7), and they must take all feasible precautions to avoid, and in any event minimize, incidental loss of civilian life, injury to civilians and damage to civilian objects, including the natural environment (Rule 8). The destruction of any part of the natural environment by a non-State party to an armed conflict is prohibited, unless required by imperative military necessity (Rule 13), and the pillage of property constituting part of the natural environment is prohibited (Rule 14).

80 Timothy Bosetti *et al.*, *Environmental Guidebook for Military Operations*, FOI-S–2922–SE, Swedish Defence Research Agency, Umeå, 2008, p. 33 and Appendix 10, p. A10-5. The Guidebook was developed by representatives of defence organizations of Finland, Sweden and the United States. Although the Guidebook is designed for use by any sending nation, it consists of recommendations only and does not necessarily reflect official policy or doctrine.

81 Joint NATO Doctrine, above note 27, para. 2.2.2,

82 *Ibid.*, para. 2.2.2.b.

83 *Ibid.*, para. 2.2.2.c.

84 The following apply in whole or in part to non-State armed groups, with certain examples only applying to non-State armed groups party to an armed conflict to which Additional Protocol II applies, as indicated in the Guidelines commentary: Rules 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, Recommendations 17 and 18, Rules 19, 20, 21, 22, 23, 24, 26, 28, 29. Rules 1, 2, and 3(A) arguably also bind non-State armed groups.

Though these IHL obligations do not cover the full gamut of environmental problems in areas under the control of non-State armed groups in contemporary conflicts, they do provide a minimum set of requirements, the potential of which is sometimes overlooked.

The prevention of violations of these rules by non-State armed groups directs practitioners' attention to both formal and informal norms; both play a critical role in influencing the behaviour of non-State armed groups.[85] With respect to formal norms, integrating IHL's protection of the natural environment into the doctrine, training and compliance mechanisms of non-State armed groups can increase restraint, and – perhaps unsurprisingly given the intertwining of civilian fates with environmental protection – some non-State armed groups do feature IHL and other environmental protections in their codes of conduct. Scholarship has identified examples of commitments made in various contexts, including Colombia, Ethiopia, Iraq, Mali, Myanmar and Somalia.[86] Further collection and analysis of non-State armed groups' commitments and practices in this area would be valuable.

More tools for promoting such formal commitments would also help, and two recent ones tailored to non-State armed groups explicitly seek to reduce environmental damage. In 2021, the NGO Geneva Call developed a new Deed of Commitment on the Prevention of Starvation and Addressing Conflict-Related Food Insecurity, the preamble of which recognizes that IHL protects the natural environment.[87] The Deed can be signed by non-State armed groups, thereby offering them an opportunity to pledge respect for IHL on this topic, albeit via a brief reference. In 2023, the ICRC released a new operational handbook for armed groups; its guidance affirms that the natural environment must be protected, advises commanders to collect information about areas of environmental importance when planning operations, and promotes consideration of the likely damage resulting from attacks, including the immediate and longer-term consequences on the natural environment.[88] Rule 21

85 See ICRC, *The Roots of Restraint in War*, Geneva, 2018.

86 See examples in Thibaud de La Bourdonnaye, "Greener Insurgencies? Engaging Non-State Armed Groups for the Protection of the Natural Environment during Non-International Armed Conflicts", *International Review of the Red Cross*, Vol. 102, No. 914, 2021; Jonathan Somer, "Environmental Protection and Non-State Armed Groups: Setting a Place at the Table for the Elephant in the Room", CEOBS, 4 December 2015, available at: https://ceobs.org/environmental-protection-and-non-state-armed-groups-setting-a-place-at-the-table-for-the-elephant-in-the-room/; Laura Baron-Mendoza, "FARC-EP's Rebel Environmental Governance: Creating Legal Legacies of War", *Armed Groups and International Law*, 2 June 2023, available at: www.armedgroups-internationallaw.org/2023/06/02/farc-eps-rebel-environmental-governance-creating-legal-legacies-of-war/; Jairo Munive and Finn Stepputat, "How Non-State Armed Groups Engage in Environmental Protection", DIIS Policy Brief, Danish Institute for International Studies, 24 January 2023, pp. 2–3, available at: www.diis.dk/en/research/how-non-state-armed-groups-engage-in-environmental-protection.

87 Geneva Call, "Geneva Call's New Deed of Commitment on the Prevention of Starvation and Addressing Conflict-Related Food Insecurity", 25 September 2021, available at: www.genevacall.org/news/geneva-calls-new-deed-of-commitment-on-the-prevention-of-starvation-and-addressing-conflict-related-food-insecurity/.

88 ICRC, *Reducing Civilian Harm in Urban Warfare: A Handbook for Armed Groups*, Geneva, 2023, pp. 13, 15, 16, 23.

of the accompanying "Example Rules for Fighters", which aim to serve as a model code of conduct for armed groups, stipulates: "Respect all cultural objects, education facilities, places of worship and the natural environment."[89]

Beyond formal IHL, preventing violations also involves reliance on value-based norms as a source of restraint. An exclusive focus on the ICRC Guidelines is not effective if removed from the values underpinning its norms; linking the law to local norms and values gives it greater traction. Specifically in contexts where Islam is used as part of the value system of weapons bearers, a number of parties to conflict have expertise in and look to the rules of the Islamic law of war as they fight, and can be more conversant in and loyal to these rules than to IHL. Scholars of the Islamic law of war are making headway in examining how its rules apply to environmental damage in armed conflict, and this could make an influential contribution to efforts to prevent damage in years to come, if appropriately leveraged in dialogue with relevant groups.[90]

While plenty of norms do bind non-State armed groups, there are nevertheless certain IHL obligations that either do not apply to them (for example, Rule 31 of the ICRC Guidelines regarding legal advisers, or Rule 32 regarding weapons review) or are only arguably applicable in non-international armed conflicts (e.g. Rules 1–3). In addition, some actions of non-State armed groups that damage the environment lie beyond the scope of IHL; examples might include unsustainable agricultural practices, the illegal trade of wildlife, or non-performance of conservation of protected areas designated under MEAs. In other words, there are certain "gaps" in the international law governing the environmental activities of non-State armed groups.

Three developments could offer a significant response to these gaps if their operationalization is pursued in the years ahead. First, the PERAC Principles do not make a distinction between international armed conflicts and non-international armed conflicts, and thus the Principles that apply during conflict govern the conduct of non-State armed groups, except where distinctions are made in the Principles or in their commentaries.[91] Second, Recommendation 18 of the ICRC Guidelines encourages parties to non-international armed conflicts to apply rules of IHL that enhance protection of the natural environment, without differentiating based on the conflict's classification as international or non-international. Indeed, as can be said for civilian harm, legal explanations of the classification of a conflict do not alter the damage wrought by the conflict on the natural environment in practice, nor do they lighten the cost of such damage that future generations must bear.[92] Third and finally, scholarship is exploring models

89 *Ibid.*, p. 50.

90 See the article by Ahmed Al-Dawoody and Kelisiana Thynne in a forthcoming issue of the *Review*: Ahmed Al-Dawoody and Kelisiana Thynne, "Dialogue and Diligence: The Protection of the Natural Environment under Islamic Law as a Vector for International Humanitarian Law Implementation", *International Review of the Red Cross*, forthcoming.

91 PERAC Principles, above note 16; ILC Commentaries on the Draft PERAC Principles, above note 38, commentary on Draft Principle 1, para. 3.

92 ICRC Guidelines, above note 1, paras 214–216.

that could be promoted – as a matter of policy – of environmental responsibilities under international human rights law and international environmental law based on the non-State armed groups' level of territorial control.[93] The most pressing frontier for progress is thus the operationalization of both the existing law and gap-filling recommendations for the policy and practice of these groups.

Issue 10: Recommendations and good practices related to IHL's protection of the natural environment

The negative environmental impacts we continue to see in armed conflicts today attest to the urgency of accelerating efforts to enhance respect for existing IHL rules that set limits on the damage that States and non-State armed groups can lawfully cause to the natural environment in war, through better dissemination, implementation and enforcement.[94] IHL's most important challenge continues to be lack of compliance with its rules.[95] The aim of the ICRC Guidelines is precisely to encourage and facilitate the adoption of concrete measures to enhance respect for IHL's protection of the natural environment. They are a reference tool for States, parties to armed conflicts and other actors who may be called on to promote, implement, apply and enforce IHL addressing the natural environment.

To drive implementation forward, in the Guidelines the ICRC makes four key recommendations to States and parties to armed conflict on which it hopes to see change in the coming years (para. 14). First, States and other actors have more work to do to disseminate IHL rules protecting the natural environment, as reflected in the Guidelines, and to integrate these into the doctrine, education, training and disciplinary systems of armed forces and into national policy and legal frameworks. For instance, national IHL committees or similar entities could be tasked with advising and assisting national authorities in this regard.[96] Second,

93 See, for example, T. de La Bourdonnaye, above note 86, pp. 592–604.

94 For IHL rules relating to respect for, implementation and dissemination of IHL rules protecting the natural environment, see ICRC Guidelines, above note 1, Part IV; see also ICRC, *Bringing IHL Home: Guidelines on the National Implementation of International Humanitarian Law*, Geneva, 19 July 2021, p. 12 and the example of the pledge of Finland and the Finnish Red Cross at pp. 16 and 37. Further, see the pledges submitted at the 33rd International Conference of the Red Cross and Red Crescent, Geneva, 2019, jointly by the governments and National Red Cross and Red Crescent Societies (National Societies) of Denmark, Finland, Iceland, Norway and Sweden, and by the government of Burkina Faso, available at: https://rcrcconference.org/about/pledges/search; as well as the earlier pledge made by the governments of Denmark, Finland, Norway and Sweden and the respective National Societies of those countries, Pledge P1290, presented at the 31st International Conference of the Red Cross and Red Crescent, Geneva, 28 November–1 December 2011. And see Jani Leino, "Bringing IHL Home: The Protection of the Environment in War", *Humanitarian Law and Policy Blog*, 12 October 2021, available at: https://blogs.icrc.org/law-and-policy/2021/10/12/ihl-protection-environment-war/.

95 ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts: Recommitting to Protection in Armed Conflict on the 70th Anniversary of the Geneva Conventions*, Geneva, 2019, pp. 72–77; ICRC, *Twelve Issues for 2022: What States Can Do to Improve Respect for International Humanitarian Law*, Geneva, 2022, pp. 16–20.

96 For instance, Slovenia organized consultations between the Austrian, French, German and Slovenian IHL committees, the Dutch IHL platform and the Portuguese Ministry of Foreign Affairs on IHL issues, focusing on strengthening coordination and promoting respect for IHL, and discussing issues related

States and parties to armed conflict can adopt and implement measures to increase understanding of the effects of war on the natural environment prior to and regularly during military operations, whenever feasible and operationally relevant to minimize the direct and indirect environmental impacts they may have. Third, States and parties to armed conflict can identify areas of particular environmental importance or fragility and designate them as demilitarized zones, barring all military action and the presence of troops and military material from these areas. Finally, they can exchange good practices and examples of measures to comply with IHL obligations protecting the natural environment, through activities such as conferences, military training and exercises, and regional forums.

For each of these recommendations, progress has already been made. There are a wealth of examples of good practices and measures on which to build. A related highlight since the ICRC Guidelines were published was the State expert meeting on IHL protecting the environment in armed conflicts organized by Switzerland and the ICRC in early 2023 for all States party to the Geneva Conventions, the aim of which was progress on implementation. The meeting brought together almost 380 experts, primarily from ministries of defence, the environment and foreign affairs, from over 120 countries. During the meeting, States shared challenges encountered for enhancing the protection of the environment in war and good practices to address them, though they did not always specify when the latter are undertaken as a matter of policy or of law. A few salient examples of (decontextualized) State practice from the meeting are set out below, but a more comprehensive overview can be found in the Chair's Summary of the meeting, prepared by Switzerland and the ICRC.[97]

The State expert meeting discussed three topics, the first of which was dissemination, training and integration of IHL rules regarding the protection of the natural environment at the national level, including proactively in peacetime. In this respect, States shared numerous examples of military doctrine, education and training that expressly incorporate relevant rules.[98] States have also created pools of specialized staff within the armed forces, including legal advisers, who are trained on IHL's environmental protections in order to provide specific advice to military commanders. As another area of good practice, States gave examples of domestic laws and regulations that regulate the assessment of the environmental effects of operations in the production of military equipment, or that criminalize unlawful acts against the environment in armed conflicts. Lastly, some armed forces draw from the expertise of other national authorities to identify environmental vulnerabilities and prevent environmental harm.

The second topic focused on assessing the effects of military operations on the natural environment, and the implications of this for operational planning and

to the protection of the environment in armed conflicts and climate change: ICRC, *Bringing IHL Home through Domestic Law and Policy: Report*, Fifth Universal Meeting of National Committees and Similar Entities on International Humanitarian Law, Geneva, 28 June 2022, p. 15, available at: www.icrc.org/en/document/bringing-ihl-home-through-domestic-law-and-policy-report.

97 Chair's Summary, above note 11.

98 *Ibid.*, section 1.2, pp. 5–7.

decision-making.[99] States shared practice on anticipating environmental aspects in planning from the beginning and throughout the operational cycle, for example by gathering environmental data on an area of operations prior to deployment and including this data in operational orders. Some States mentioned that they do, or have plans to, consult maps of areas of particular environmental importance or fragility in combat areas, and include environmental damage in post-strike "battle damage assessments" or "after-action reviews" to inform future operations. A State in the Sahel uses data sheets to record the impact of munitions in environmentally fragile zones, with the aim of informing choice of munitions in order to reduce the risk of bush fires. States also shared practice on how they inject environmental expertise into military planning by establishing staff or units that have specific environmental expertise and responsibilities within the armed forces. In the same vein, some armed forces' planning personnel seek advice from agencies with environmental expertise where feasible, and States suggested that this could be supplemented by remote and open-source data. Finally, some States consider environmental impacts as they review the lawfulness of new weapons, means and methods of warfare.

The final topic of the meeting was the identification and designation of areas of particular environmental importance or fragility as demilitarized zones.[100] States shared practices related to both the identification and prioritization of relevant areas, and how they might be better protected in armed conflict beyond demilitarization measures. They gave examples of how they identify and designate different categories of protected areas under domestic frameworks as well as by reference to multilateral environmental agreements, though implications for the planning or conduct of military operations were not always clear. More specifically, some States shared examples of their military doctrine or guidance that identifies certain areas of particular environmental importance or fragility on their own territory, including maps used by troops in military training or operations. Turning to prospects for future improvements to policy and practice, States explored possibilities for including references to prioritized environmental areas in military training, and enhancing coordination with national environmental agencies. The importance of prioritization of protected areas was emphasized, to ensure that measures to take them into account are feasible and practical for armed forces. To begin with, such areas could be identified via recourse to existing peacetime frameworks that could then be further refined, for instance, based on key biodiversity areas or on the World Heritage Convention natural heritage sites. It was also recalled that the international legal framework on the rights of indigenous peoples would be an important consideration in any new measure to protect environmental areas in armed conflict. Finally, beyond full demilitarization, other alternative or additional measures were raised as possibilities for better protecting such areas,

99 *Ibid.*, section 2.2, pp. 9–12. See also Issue 5 above.
100 *Ibid.*, section 3.2, pp. 14–16. See also Issue 8 above.

including better collaboration between military and conservation actors around such zones, and informing adversaries of these areas.

The ICRC encourages States to continue to share and improve their practice. Environmental protection should be more of a reflex among decision-makers conducting military operations. Although progress can be incremental and slow, States and non-State armed groups can make practical, tailored improvements to lessen their contribution to the environment and climate crisis.

Conclusion

The international community came together after the Vietnam War to enhance the protection of the environment during armed conflict. It did so again after the 1990–91 Gulf War. As global momentum to mitigate the effects of climate change and biodiversity decline swells, States must once again unite against this existential threat to all humankind. As part of these efforts, the ICRC asks States to incorporate the ICRC Guidelines into their military manuals and their national policy and legal frameworks, and stands ready to work with them towards this goal. The time is past when the environment was a silent casualty of war – today the international community understands that human and planetary health and survival are bound together. Wars won at the cost of the planet are pyrrhic; militaries position themselves otherwise at their own – and humankind's – peril.

International Review of the Red Cross (2023), **105** (924), 1208–1226.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000231

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The obligation to prevent environmental harm in relation to armed conflict

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Abstract

The scope of protection of the environment in relation to armed conflict has continued to expand since the issue was first introduced on the international agenda in the 1970s. Today, it is recognized that the environment is a prima facie *civilian object and as such it is entitled to the same layers of protection during an armed conflict as any civilian person or object. Thus, there is a legal obligation to prevent environmental harm in armed conflict, before the event. Given the magnitude of environmental damage that can be anticipated in relation to armed conflict, the obligation to prevent such damage in the first place is critical. In this regard, it is important to note that the legal obligation to prevent environmental harm originates from international environmental law. Furthermore, the obligation to prevent harm is an ongoing obligation. This article illustrates that the general preventive obligations found in international environmental law can shed much-needed light on*

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the general preventive obligations already established under the law of armed conflict, in furtherance of environmental protection.

Keywords: law of armed conflict, due diligence, preventive obligations, environmental harm, international armed conflict.

Introduction

Environmental harm in relation to armed conflict, as well as during peacetime, has regularly been a concern for the international community. Well-known situations of environmental damage in relation to armed conflict include the use of Agent Orange during the Vietnam War,[1] damage to oil wells in Kuwait in 1990–91,[2] the release of hazardous substances after attacks on industrial sites in Kosovo in 1999,[3] damage to water resources in Lebanon in 2006,[4] and the use of biological or chemical weapons.[5] Needless to say, environmental damage in relation to armed conflict is not a thing of the past. Following the Russian Federation's invasion of Ukraine, environmental destruction in urban as well as rural areas has occurred.[6] Reportedly, such destruction has been the result of direct attacks as well as in the form of collateral damage.[7]

Not only is environmental damage in relation to armed conflict a contemporary concern, but it is also arguably often foreseeable. Importantly, it is necessary to distinguish damage (the actual existence of environmental destruction) from harm (the anticipation of environmental damage; no actual damage is required), as the International Law Commission (ILC) sought to do in its Draft Principles on the Allocation of Loss in the Case of Transboundary Harm

1 The use of Agent Orange in Vietnam during the 1970s can be seen as one of the key moments that led to the drafting of treaty provisions to protect the environment. See Stefano Saluzzo, "CBRN Weapons and the Protection of the Environment during Armed Conflicts", in Andrea de Guttry, Micaela Frulli, Federico Casolari and Ludovica Poli (eds), *International Law and Chemical, Biological, Radio-Nuclear (CBRN) Events: Towards an All-Hazards Approach*, Brill, Leiden, 2022, p. 380.

2 In the 1990s, the media brought home live images of "eerie flames and the huge black cloud of smoke towering above burning oil rigs in the Arabian desert": Hans-Peter Gasser, "For Better Protection of the Natural Environment in Armed Conflict: A Proposal for Action", *American Journal of International Law*, Vol. 89, No. 3, 1995, p. 637. Such images ignited renewed interest from governments, the United Nations (UN) and non-governmental organizations in how the environment could be better protected from damage during war: *ibid*., p. 639.

3 United Nations Environment Programme (UNEP) and United Nations Centre for Human Settlements, *The Kosovo Conflict: Consequences for the Environment and Human Settlements*, 1999, available at: www.unep.org/resources/assessment/kosovo-conflict-consequences-environment-and-human-settlements (all internet references were accessed in June 2023).

4 Mark Zeitoun, Karim Eid-Sabbagh and Jeremy Loveless, "The Analytical Framework of Water and Armed Conflict: A Focus on the 2006 Summer War between Israel and Lebanon", *Disasters*, Vol. 38, No. 1, 2014.

5 The use of biological or chemical weapons in warfare and the subsequent efforts to prohibit such weapons form a recurring pattern in history. Edward M. Spiers, *Agents of War: A History of Chemical and Biological Weapons*, Reaktion Books, London, 2020.

6 UNEP, *The Environmental Impact of the Conflict in Ukraine: A Preliminary Review*, Nairobi, 2022, available at: www.unep.org/resources/report/environmental-impact-conflict-ukraine-preliminary-review.

7 Organisation for Economic Cooperation and Development, *Environmental Impacts of the War in Ukraine and Prospects for a Green Reconstruction*, 1 July 2022, available at: https://tinyurl.com/3bbyc3ne.

Arising Out of Hazardous Activities.[8] Although this distinction is not always clear-cut, the present article is concerned with the obligation to prevent environmental damage in relation to armed conflict – that is to say, no actual damage is required for this obligation to come into play. The question that arises is what obligations to prevent such foreseeable environmental harm are established under the law of armed conflict (LOAC). This article sets out to examine the concurrent application of preventive obligations arising from two legal regimes addressing foreseeable harm to the environment in relation to armed conflict. More specifically, it discusses whether, and if so, how preventive obligations arising under the LOAC can be clarified when viewed through the lens of international environmental law (IEL).[9]

A number of multilateral treaties provide for environmental protection under international law. These agreements are far from homogenous, with different natures of arising obligations, and diversified application ranging from bilateral to regional to global levels.[10] Some treaties are applicable to armed conflict,[11] others are expressly not,[12] and others are silent on the matter.[13] Additionally, other international actors such as the International Committee of the Red Cross (ICRC) have long engaged with the issue.[14] The most recent contribution to environmental protection is the Draft Principles on the Protection of the Environment in Relation to Armed Conflict (PERAC).[15] The aim of this

8 ILC, *Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities (with Commentaries)*, UN Doc A/CN.4/L.706/Rev.1, 2006, commentary to Principle 1, p. 120, para. 11. "Harm" is used in this article to refer to the threat to the legally protected interest, whereas "damage" refers to the actual infringement.

9 This article only considers preventive obligations. For a discussion on developing a comprehensive framework for the relationship between IEL and the LOAC, see Raphaël van Steenberghe, "The Interplay between International Humanitarian Law and International Environmental Law", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2023.

10 *Ibid.*, p. 1127.

11 For example, the UN Convention on the Law of the Sea, 1833 UNTS 3, UN Doc A/Conf.62/122OXIO, 1999; the International Convention for the Prevention of Pollution of the Sea by Oil, 327 UNTS 4, 1954; the International Convention for the Prevention of Pollution from Ships (as Amended), 1340 UNTS 184, 1973; the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Revised Barcelona Convention), UN Doc UNEP(OCA)/MED IG.6/7, 1976; and the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, 1506 UNTS 157, 1983.

12 For example, the Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment, ETS 150, 1993; and the International Convention on Civil Liability for Oil Pollution Damage, 973 UNTS 3, 1969.

13 For example, the UN Convention on Biological Diversity, 1760 UNTS 79, 1992; the Vienna Convention on Civil Liability for Nuclear Damage, 1063 UNTS 266, 1963; the Convention on International Trade in Endangered Species of Wild Fauna and Flora, 993 UNTS 243, 1963; and the UN Framework Convention on Climate Change, 1771 UNTS 107, 1992.

14 The ICRC has been more systematically committed to this work since 1991: see, for example, Jean-Marie Henckaerts, "Towards Better Protection for the Environment in Armed Conflict: Recent Developments in International Humanitarian Law", *Review of European Community and International Environmental Law*, Vol. 9, No. 1, 2000, p. 13. The present thematic issue of the *Review* also confirms the ICRC's contemporary interest in the topic.

15 ILC, *Draft Principles on the Protection of the Environment in Relation to Armed Conflict: Report of the International Law Commission*, UN Doc. A/77/10, 2022 (PERAC), available at: https://legal.un.org/ilc/texts/instruments/english/draft_articles/8_7_2022.pdf.

article is thus to examine how preventive obligations originating from IEL can emphasize and deepen our understanding of how the general obligation to prevent war crimes under the LOAC applies to protecting the environment in relation to armed conflict. The general obligation to prevent war crimes, as will be illustrated below, applies to all conduct that contravenes the LOAC provisions. Given that the environment is a civilian object, this obligation also applies with regard to environmental harm.

This article first briefly introduces the substantial provisions that seek to prevent environmental harm under the LOAC, consisting of Geneva Conventions I–IV[16] and Additional Protocols I and II[17] as well as the relevant customary rules and humanitarian principles that apply. Second, the nature of the general preventive features of the LOAC is outlined. Third, the way in which the general obligation to prevent harm arising from IEL (as reiterated in the PERAC) is examined, as well as how this obligation should be understood and read in conjunction with preventive obligations established by the LOAC. This includes a note on some of the methodological challenges associated with simultaneously applying different treaty regimes. Lastly, it is argued that due regard to the preventive obligations arising from the LOAC's provisions is required, and that interpreting them through the lens of the preventive obligations established under IEL is feasible and can clarify the scope of the obligation to prevent environmental harm in the context of armed conflict under the LOAC; such reading reinforces environmental protection in relation to armed conflict and emphasizes the importance of taking appropriate measures well before a conflict arises. Systematically and concretely interpreting and re-emphasizing existing *preventive* obligations under the LOAC and examining how these obligations should truly be understood in the context of armed conflict constitutes the substantive contribution that this article makes to the debate on environmental protection in relation to armed conflict.

Substantive protection of the natural environment under the LOAC

The "natural environment" appears in two provisions under the LOAC: Articles 35(3) and 55 of Additional Protocol I (AP I). This means that in the LOAC, the

16 Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of 12 August 1949, 75 UNTS 31 (entered into force 21 October 1950); Geneva Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea of 12 August 1949, 75 UNTS 85 (entered into force 21 October 1950); Geneva Convention (III) relative to the Treatment of Prisoners of War of 12 August 1949, 75 UNTS 135 (entered into force 21 October 1950); Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War of 12 August 1949, 75 UNTS 287 (entered into force 21 October 1950).

17 Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I); Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978).

provisions protecting the natural environment expressly only apply in international armed conflict. The "natural environment" refers to a "system of inextricable interrelations between living organisms and their inanimate environment".[18] A perhaps more illuminating definition is that the "natural" environment encompasses the physical condition of land, air and water, as distinct from the "human" environment, which includes health, social and other man-made conditions.[19] It has been suggested that the natural environment is protected by general LOAC rules[20] in as much as it "affects the civilian population".[21]

The first mention of the natural environment in Article 35(3) is placed "neatly beside the most fundamental provisions on means and methods"[22] in AP I. In this way, it evades the possible limitation of only being applicable to attacks which affect objects on land.[23] Although Article 35 was passed by consensus, a number of opinions or understandings were attached to it.[24] This basic rule of means and methods of warfare was held to be the codification of existing law[25] when included in AP I. The natural environment is thus explicitly protected in as much as the provision prohibits "methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment".[26] The authors of the Commentaries on the Additional Protocols note that although the principle remains unchanged, its application may vary; the exact scope of the principle and the practices that it leads to may vary over time as per custom and other obligations arising from international law.[27]

Article 55 of AP I, which establishes that "care shall be taken to protect the natural environment", comes after Article 54, which explicitly prohibits starvation.[28] Article 55 is wider in its protection than Article 54, since it is not limited to protecting objects indispensable to survival but actually includes the biological

18 Yves Sandoz, Christophe Swinarski and Bruno Zimmerman (eds), *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949*, ICRC, Geneva, 1987 (ICRC Commentary on the APs), p. 415, para. 1451.

19 William H. Rodgers, *Handbook on Environmental Law*, West Publishing, St Paul, MN, 1977, cited in Stuart Casey-Maslen and Steven Haines, *Hague Law Interpreted: The Conduct of Hostilities under the Law of Armed Conflict*, Hart Publishing, Oxford, 2018, p. 271.

20 These rules are (1) protection of enemy property from wanton destruction, (2) protection against pillage, (3) protection of civilian objects during hostilities, (4) protection of objects indispensable to the survival of the civilian population, and (5) the rules regarding lawfulness of weaponry. Jean-Marie Henckaerts and Dana Constantin, "Protection of the Natural Environment", in Andrew Clapham and Paola Gaeta (eds), *The Oxford Handbook of International Law in Armed Conflict*, Oxford University Press, Oxford, 2014, p. 472.

21 ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment Under International Humanitarian Law (with Commentaries)*, Geneva, 2020, p. 17.

22 Karen Hulme, "Taking Care to Protect the Environment against Damage: A Meaningless Obligation?", *International Review of the Red Cross*, Vol. 92, No. 879, 2010, p. 676.

23 AP I, Art. 49(3).

24 ICRC Commentary on the APs, above note 18, p. 398, para. 1403.

25 *Ibid.*, p. 390, para. 1382.

26 AP I, Art. 35(3).

27 ICRC Commentary on the APs, above note 18, p. 391, para. 1385.

28 *Ibid.*, p. 662, para. 2124.

environment in which a population is living in its broadest sense.[29] The exclusion of the word "civilian" in defining the population was deliberate in order to underline that environmental harm can remain for a long time, without any discrimination regarding what population is affected.[30] Further to the positioning of the provision in the treaty and perhaps more importantly, Article 55 sits within Part IV, Section I, Chapter III, entitled "Civilian Objects". The *prima facie* civilian status makes the environment more tangible and acknowledges its existence.[31] Under the LOAC, the environment thus benefits from the protective design of the treaties through the principles of distinction, proportionality and precaution. In other words, as with any civilian object that may be assessed to determine its feasibility as a military objective, the cumulative rules of proportionality and precaution apply to the environment.[32] Regarding the latter obligation, scholars have pointed out that the "lack of scientific certainty about the environmental consequences of certain military operations does not absolve parties to a conflict from taking proper precautionary measures to prevent undue damage to the environment".[33] This means that a breach of this obligation could amount to a war crime under LOAC treaty law – a war crime for which there is a general obligation of prevention. Separately, the law has an absolute threshold above which any foreseeable damage is prohibited, and therefore, any attack that may give rise to widespread, long-lasting and severe damage constitutes a war crime.[34]

The notion of "widespread" seems to be the one that is least problematic to understand, as it is held to be an area of several hundred square kilometres.[35] "Long-term" is seen to constitute more than medium duration, which might imply decades, even amounting to a generation or more,[36] thus remaining an environmental problem to be dealt with by those who were children at the time of the conflict

29 *Ibid.*, p. 662, para. 2126.

30 *Ibid.*, p. 663, para. 2134.

31 Two main arguments against considering the environment a civil object have been brought forward. First, not all that is included in the notion of the environment is physical or can be touched, e.g. the atmosphere or outer space. Second, while AP I has set out a very high threshold, bringing the environment into the general protection framework by defining it as a civilian object would circumvent this high threshold. See Cordula Droege and Marie-Louise Tougas, "The Protection of the Natural Environment in Armed Conflict – Existing Rules and Need for Further Legal Protection", *Nordic Journal of International Law*, Vol. 82, No. 1, 2013, p. 26. With regard to the first argument, the issue of the physical shape or appearance of e.g. the atmosphere must be kept separate from, and not be confused with, its status under law. As for the second argument, the LOAC explicitly recognizes grave breaches in Articles 49, 50, 129 and 146 of the four Geneva Conventions respectively and Article 86 of AP I; in addition, *all acts* contrary to the Geneva Conventions must be suppressed. The LOAC recognizes three types of breaches: grave breaches, war crimes and legal breaches, with different levels of detail. See, further, below note 69 and accompanying text.

32 See Stefan Oeter, "Methods and Means of Combat", in Dieter Fleck (ed.), *The Handbook of International Humanitarian Law,* 3rd ed., Oxford University Press, Oxford, 2013, pp. 214–215.

33 J.-M. Henckaerts and D. Constantin, above note 20, p. 481.

34 Yoram Dinstein, *The Conduct of Hostilities under the Law of International Armed Conflict*, Cambridge University Press, Cambridge, 2022, p. 277.

35 ICRC Commentary on the APs, above note 18, p. 417 fn. 117.

36 But compare this with IEL notions of lengthened scope for preventive obligations in peacetime, which hold that the "near future" is seen to cover the whole of the twenty-first century. Leslie-Anne Duvic-Paoli, *The Prevention Principle in International Environmental Law*, Cambridge University Press, Cambridge, 2018, p. 190.

(or even unborn future generations), and who clearly did not cause the harm.[37] "Long-term" according to the Commentary to AP I refers to "serious disruption of the natural equilibrium permitting life and the development of man and all living organisms".[38] In this sense, the drafters' intention seems to have been that "battlefield damage incidental to conventional warfare would not normally be proscribed by [Article 35]".[39] Disentangling "long-lasting" from "severe" is something of an ordeal: the latter is understood as a major interference with human life or natural resources which considerably exceeds the battlefield damage to be regularly expected in armed conflict.[40]

The contention with these substantive provisions relates to the high as well as unclear threshold created. The requirement of "widespread, long-term *and* severe" damage is construed as a cumulative and threefold threshold of harm in Article 35(3) and Article 55(1) alike.[41] Despite this high threshold, there is environmental harm that may be anticipated to breach it.[42] It comes as a mild consolation that environmental harm passing the high and imprecise threshold "sets an absolute limit to the damage that is tolerated for the natural environment".[43] Scholars have asked whether this high threshold of widespread, long-term and severe damage is still valid, or if it has fallen into desuetude.[44] Although the threshold may be at the level of, or come close to, ecocide,[45] it must be accepted to be conclusively established in the *travaux préparatoires* of AP I.[46] On the other hand, the preventive obligation remains intact, even if what should be prevented after the event must be assessed to have passed a high threshold.

37 The International Court of Justice (ICJ) held in the *Nuclear Weapons* case that the natural environment should be protected to such an extent that future generations can enjoy the same systemic interconnectedness with the environment without suffering harm therefrom. ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, *ICJ Reports 1996*, p. 226, para. 29.

38 ICRC Commentary on the APs, above note 18, p. 420, para. 1462.

39 *Ibid*., p. 417, para. 1454.

40 A considerably shorter time span is found in the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, 1108 UNTS 151, 1977 (entered into force 5 October 1978), where it is said to be a "period of months or approximately a season". ICRC Commentary on the APs, above note 18, p. 416, para. 1452.

41 Karen Hulme, "Introduction", in Karen Hulme (ed.), *Law of the Environment and Armed Conflict*, Edward Elgar, Northampton, MA, 2017, p. xx.

42 Hulme has pointed out that, for example, environmentally persistent chemicals may cause ecosystem-level damage that lasts for decades and could even alter natural conditions. Karen Hulme, "Using International Environmental Law to Enhance Biodiversity and Nature Conservation During Armed Conflict", *Journal of International Criminal Justice*, Vol. 20, No. 4, 2022, p. 12.

43 C. Droege and M.-L. Tougas, above note 31, p. 27.

44 Michael Bothe, Carl Bruch, Jordan Diamond and David Jensen, "International Law Protecting the Environment during Armed Conflict: Gaps and Opportunities", *International Review of the Red Cross*, Vol. 92, No. 879, 2010, p. 576.

45 In 2021 a panel of twelve independent legal experts proposed the following definition of the term ecocide, where the requisites are not cumulative: "For the purpose of this Statute, 'ecocide' means unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment being caused by those acts." Stop Ecocide Foundation, *Independent Expert Panel for the Legal Definition of Ecocide: Commentary and Core Text*, June 2021, available at: https://tinyurl.com/3x39nc3h. It is hoped that ecocide will be recognized as the fifth international crime and will be added to Article 5(1) of the Rome Statute of the International Criminal Court.

46 K. Hulme, above note 42, p. 11.

Therefore, if no preventive actions are taken beforehand, such conduct may constitute a breach of this obligation.

Article 55 protects the civilian population and prohibits "methods or means of warfare which are intended or may be expected to cause"[47] environmental damage that negatively impacts on the population. Article 35(3), on the other hand, prohibits unnecessary injury.[48] Thus Article 35(3) is concerned with methods of warfare but is wider in scope than Article 55, and from the outset it seeks to prohibit unnecessary injury to the natural environment.[49] Dinstein argues that the best interpretation is to interlink Article 35(3) with Article 55(1), asserting that "injury to human beings (Article 55(1)) should be looked upon only as the foremost category included within the compass of a wider injunction against causing environmental damage (Article 35(3))".[50]

Carrying out an attack with the intention to cause environmental damage is included in the Rome Statute of the International Criminal Court as a war crime, but differently from what is set out in AP I. The Rome Statute speaks of intentional attacks that cause severe damage to the non-human environment which would be clearly excessive in relation to the military advantage anticipated.[51] AP I uses the notion of "expected" with the feature of anticipation (i.e., foreseeable outcome), which must be seen to differ from the intentional act (i.e., desired outcome). It would nevertheless cover recklessness, and possibly amount to risk-based liability on behalf of the individual.[52] Lastly, it is noteworthy that if the natural environment is harmed through the extensive and wanton destruction of property when Geneva Convention IV applies, this would indeed amount to a grave breach of Article 147.[53]

The substantive provisions that protect the natural environment under the LOAC require that due care is taken to protect the environment. In addition to the treaty obligation of care, Rule 44 of the ICRC Customary Law Study[54] holds that "[m]ethods and means of warfare must be employed with due regard to the protection and preservation of the natural environment".[55] This customary rule

47 AP I, Art. 55(3).

48 ICRC Commentary on the APs, above note 18, p. 414, para. 1449.

49 The general perception in the 1970s, when these treaties were drafted, is described as anthropocentric, which is to say that the environment should be protected not for its own intrinsic value, but for human beings in symbiosis with the environment. IEL, on the other hand, stands out as the legal regime that contains ecocentric elements, where the environment is protected for its own sake. Anne Dienelt, *Armed Conflicts and the Environment: Complementing the Laws of Armed Conflict with Human Rights Law and International Environmental Law*, Springer, Cham, 2022, pp. 202, 204.

50 Y. Dinstein, above note 34, p. 273.

51 Rome Statute of the International Criminal Court, 2187 UNTS 90, 1998, Art. 8(2)(b)(iv).

52 Lucia Zedner and Andrew Ashworth, "Just Prevention: Preventive Rationales and the Limits of the Criminal Law", in R. A. Duff and Stuart P. Green (eds), *Philosophical Foundations of Criminal Law*, Oxford University Press, Oxford, 2011, p. 285.

53 Y. Dinstein, above note 34, p. 283. This protection implicitly extends to the environment, e.g. pertaining to oil wells. H.-P. Gasser, above note 2, p. 638

54 Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), p. 143, available at: https://ihl-databases.icrc.org/en/customary-ihl.

55 *Ibid.*

also requires that during military operations, all feasible precautions must be taken to avoid, and in any event minimize, incidental damage to the environment.[56] Should scientific certainty as to the effects on the environment of certain military operations be lacking, a party to the conflict still remains obliged to take such precautions.[57]

The customary rule of due regard must be taken into account in all phases of all military operations. Furthermore, it is distinct from, and must be treated separately from, the obligation to prevent harm.

From the foregoing discussion, it can be concluded that the LOAC in treaty law as well as customary law has provisions that oblige States to protect the environment in armed conflict. Nevertheless, several issues remain problematic or unclear. These include the lack of clarity in the definition of the natural environment, the very high threshold established by the treaty law, and the practical implications of considering the environment a civilian object. On the other hand, a direct legal implication from considering the environment a civilian object is that it falls under the general obligation to prevent harm in the form of war crimes under the LOAC. The discussion therefore now turns to the general obligation to prevent war crimes, and what the interplay with IEL can bring to the analysis.

Nature and features of the preventive obligations under the LOAC

The LOAC serves the purpose of (1) setting the rules for the conduct of warfare and (2) ensuring legal protection for those who are not actively taking part in the conflict.[58] There are several distinct legal provisions that require States to take measures *beforehand* – that is, *preventive* measures, where the aim is to prevent future violations (including grave breaches) of the LOAC, should armed conflict erupt. In this article, it is argued that a refined understanding of the general obligation to prevent harm in the form of war crimes under the LOAC, taken in combination with State obligations arising from IEL, extends much-needed protection to the environment, whilst also increasing the protection of *all* persons who find themselves in an armed conflict. There are several options at hand when seeking to reconcile different legal regimes with each other.[59] Often referred

56 Michael Bothe, "Precaution in International Environmental Law and Precautions in the Law of Armed Conflict", *Goettingen Journal of International Law,* Vol. 10, No. 1, 2020, p. 276. For a counterargument pertaining to the customary status of due regard, see Y. Dinstein, above note 34, p. 267.

57 J.-M. Henckaerts and D. Constantin, above note 20, p. 481. Dieter Fleck has argued that the principle of due regard captured in Rule 44 is descriptive rather than prescriptive, as it is put in the context of precautionary conduct of military operations. Dieter Fleck, "The Protection of the Environment in Armed Conflict: Legal Obligations in the Absence of Specific Rules", *Nordic Journal of International Law*, Vol. 82, No. 1, 2013, p. 12.

58 Jann K. Kleffner, "Scope of Application of International Humanitarian Law", in D. Fleck (ed.), above note 32, p. 43.

59 D'Aspremont notes that mechanisms to solve norm conflicts can be based on (1) status of the norm (such as *jus cogens)*, (2) specificity (*lex specialis*) or (3) temporality (*lex posterior).* Jean D'Aspremont, "The Systemic Integration of International Law by Domestic Courts: Domestic Judges as Architects of the

to when considering international human rights law and the LOAC at the same time is the notion of *lex specialis derogat legi generali*, which translates into English as "special law repeals general laws".[60] Another way to reconcile separate legal regimes is by seeking mutual supportiveness or complementarity.[61] This is a useful option when seeking to reconcile different bodies of law that have evolved around completely different problem areas, such as IEL and the LOAC.[62] It is this approach of complementarity that is used in the following discussion.

When examining the basis of the obligation to prevent all war crimes in international armed conflict, a number of distinctions are necessary at the outset. The first distinction that must be made is between the general preventive obligations under the LOAC of the parties to the conflict, and the more immediate preventive obligation of the commander, due to the commander being (1) closer to information about the specific conditions at any given point in time, and (2) in possession of a certain amount of control over the situation and thereby having the power to decide on any intervention. However, the general obligation to prevent harm under the LOAC would notably differ in some critical aspects. For example, it is not limited to belligerents as it arises long before an armed conflict even exists. Given that the obligation of prevention also entails an obligation of result, it cannot categorically be qualified only by "whenever feasible" – the intervention called for must be more decisive than that.

Article 1 common to the four Geneva Conventions[63] first of all provides that States must abstain from committing war crimes. Additionally, there are indications that States are required to do more than limit themselves to not committing war crimes. By virtue of common Article 1, the Contracting Parties "undertake to respect and ensure respect for the present Convention".[64] It seems that Contracting Parties have the twofold obligation of (1) not committing war crimes and (2) ensuring respect for the provisions of the treaties; thus, some form of additional positive action is implied.[65] As common Article 1 applies to all the provisions in the Conventions, it must also apply to common Article 3. This opens up the possibility that it applies in non-international armed conflict as well – and not only that, it applies to *all* circumstances. Given that the environment is *prima facie*

Consistency of the International Legal Order", in André Nollkaemper and Ole Kristian Fauchald (eds), *The Practice of International and National Courts and the (De-)Fragmentation of International Law*, Hart, London, 2012, p. 147.

60 "Lex Specialis Derogat Legi Generali", in Aaron X. Fellmeth and Maurice Horwitz (eds), *Guide to Latin in International Law,* 2nd ed., Oxford University Press, Oxford, 2021.

61 Michael Bothe, "Precaution in International Environmental Law and Precautions in the Law of Armed Conflict", *Goettingen Journal of International Law* Vol. 10, No. 1, 2020, p. 269.

62 *Ibid*.

63 For a detailed analysis and drafting history of common Article 1, see Frits Kalshoven, "The Undertaking to Respect and Ensure Respect in All Circumstances: From Tiny Seed to Ripening Fruit", in Frits Kalshoven (ed.), *Reflections on the Law of War: Collected Essays*, Martinus Nijhoff, Leiden, 2007.

64 Furthermore, the obligation to disseminate the LOAC, for the purpose of spreading knowledge and prevent future breaches, is included in Articles 47, 48, 127 and 144 of the four Geneva Conventions respectively, as well as in Article 83 of AP I and Article 19 of Additional Protocol II.

65 In this regard, compare the discussion on the obligation to respect, protect and fulfil under human rights law. See Nienke van der Have, *The Prevention of Gross Human Rights Violations under International Human Rights Law*, T. M. C. Asser Press, The Hague, 2018, p. 13.

considered to be a civilian object, an indiscriminate attack on which is prohibited, such an attack may constitute a war crime. It must now be examined to what extent there may be a general obligation to prevent *all* war crimes.

A first indication that there may be a *general* obligation to prevent war crimes under the LOAC has its origin in the *raison d'être* of the Geneva Conventions. The purpose of these Conventions is to attenuate to the maximum extent possible the suffering of all victims of war.[66] In as early as 1870, Gustave Moynier, then president of the ICRC, identified and articulated the need to set out how States should implement the treaties.[67] He proposed "the establishment of an international jurisdiction for the *prevention* and repression of breaches of the Geneva Convention".[68] This idea was first captured in treaty law in the 1949 Geneva Conventions, which oblige States to "take measures necessary for the suppression of *all acts* contrary to the provisions of the [Conventions]".[69] The first issue to note here is that this obligation is limited to the High Contracting Parties – it does not include parties to the conflict. Second, it must be noted that the law sets out a *general* objective which the States should meet.[70] Third, the notion of "suppression" needs to be considered. It should be noted that the provision requires the suppression of *all acts* contrary to the Geneva Conventions; the obligation is not limited to grave breaches or even war crimes, but addresses *all* contrary acts. Furthermore, the taking of all measures necessary for the suppression of war crimes must be distinguished from the punishing of such crimes.[71] These are separate obligations, and therefore separate responses are necessary. Concerning a State's obligation to *prevent all acts* contrary to the treaties, it is unlikely that "measures necessary for suppression" requires a State to criminalize all breaches. Administrative procedures, control mechanisms and reporting structures may well have the same result – in other words, the State has a broad range of options for complying with the provision, which is general in nature. Some of these, it is argued here, could and should extend legal protection to the environment under the LOAC. In this regard, IEL can shed more light on possible measures.

If, as established in the previous section, there is a general obligation to prevent war crimes, it is reasonable to conclude that such an obligation applies irrespective of whether the violation amounts to a grave breach[72] of the Geneva

66 Mary Ellen O'Connell, "Historical Development and Legal Basis", in D. Fleck (ed.), above note 32, pp. 34–35.

67 Jean Pictet (ed.), *Commentary on the Geneva Conventions of 12 August 1949*, Vol. 1: *Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field*, ICRC, Geneva, 1952, p. 353.

68 *Ibid.*, p. 354 (emphasis added).

69 Articles 49, 50, 129 and 146 of the four Geneva Conventions respectively, and Article 86 of AP I (emphasis added).

70 In contrast, when *grave breaches* have been committed, States are obliged "to search for persons alleged to have committed, or to have ordered to be committed, such grave breaches": *ibid.*

71 Prosecuting those who have committed war crimes presumably has a deterrent effect on future perpetrators, as discussed in L. Zedner and A. Ashworth, above note 52. Consequently, the implications of an obligation to enact necessary measures are not limited to ending impunity but also include preventing future war crimes through deterrence.

72 Articles 50, 51, 130 and 147 of the four Geneva Conventions respectively, and Article 85 of AP I.

Conventions or is any other war crime such as launching a disproportionate attack. In other words, if certain acts contrary to the Geneva Conventions and their Additional Protocols give rise to environmental harm that may disproportionally inflict suffering on people, the State would have to act against such harm, not because of an obligation in relation to the environment as such, but because of the State's obligation to prevent the resultant war crime, of *any acts*. Furthermore, due to the general nature of this obligation, it must arguably be wider in scope than having a singular focus on war crimes causing human suffering only. This is so because from a preventive aspect, it is the foreseeable risk that prompts the obligation. In other words, attacks on power plants or nuclear plants that will almost inevitably damage the environment, or attacks directed at the environment, including forests and waters or the destruction of soil at the level of war crimes, might also constitute a breach of the ongoing State obligation to prevent war crimes. In practical terms this might mean that the State has an obligation to have in place a mechanism or measures that allow it to realize when the environment risks being disproportionately damaged, which can be activated when it is reasonably foreseeable that war crimes destroying the environment will occur.

The strongest evidence of an obligation to prevent war crimes before they have been committed is to be found in the last part of AP I, under the heading "Execution of the Convention and of This Protocol". This part of the treaty contains two sections, Section I being primarily concerned with "preparatory and preventive measures",[73] many of which have to be implemented *prior* to the outbreak of armed conflict. Typically, this includes providing national legal frameworks, training and rules regarding where combat materiel should be placed. Here, applying IEL as a magnifying glass is helpful to gain a deeper understanding of what such obligations may entail with regard to protecting the environment. This obligation may encompass "training obligations for the armed forces to respect nature, including the values inherent in nature conservation, and in the basic concepts of endangered and vulnerable species and habitats".[74] Additionally, military manuals may have to be updated in order to better take environmental implications into consideration.[75] Prevention[76] and precaution[77] may in effect mean that there is an obligation to require belligerents, whenever

73 ICRC Commentary on the APs, above note 18, p. 925, para. 3280.

74 K. Hulme, above note 42, p. 12. Environmental post-war assessments can give useful insights and inform future training of armed forces: see Anne Dienelt, "'After the War Is Before the War': The Environment, Preventive Measures under International Humanitarian Law, and Their Post-Conflict Impact", in Carsten Stahn, Jens Iverson and Jennifer S. Easterday (eds), *Environmental Protection and Transitions from Conflict to Peace: Clarifying Norms, Principles, and Practices*, Oxford University Press, Oxford, 2017, p. 421.

75 *Ibid.*, p. 432.

76 Prevention refers to activities taken well before the armed conflict arises – that is, it relates to peacetime activities such as training the armed forces and the marking of specific sites/zones that should be protected in the event of armed conflict.

77 The principle of precaution comes into play nearer to the event and requires that those who plan an attack must do everything feasible to verify that the target is a military objective. Furthermore, means and methods of warfare must be selected and employed with due regard to the protection and preservation of the environment. C. Droege and M.-L. Tougas, above note 31, p. 34.

feasible, to conduct various activities, including (but not limited to) ensuring that appropriate environmental data is reported, as well as determining protected zones that need to be put in place beforehand.[78] Additionally, if the military objective could contain toxic substances, belligerents may be required to gather information about toxicity and how leakage can be avoided.[79] They may also be required to actively pursue information on the need to conserve species of wild flora and fauna and their habitats.[80]

It can be added that such training should convey a two-pronged obligation, or an obligation with two distinct aspects. First, there is the normative obligation to abstain from wilfully creating environmental damage. Second, there is an obligation to prevent, and therefore also an obligation to provide *training in how to prevent*, the occurrence of environmental harm during armed conflict, which also needs to be taken into account.[81]

Section II of AP I deals with the prevention of breaches closer to the event; in other words, when an armed conflict is ongoing. Prevention during the course of events pertains to the conduct of and decisions made by key actors, given the factual circumstances at the given time and place.[82] At this point, the emphasis will be on human action. This means that the duties arising out of the principle of precaution in attack outlined in AP I Article 57 and the precaution against the effects of attack in AP I Article 58 are obligations of conduct.[83]

Article 87 of AP I outlines State obligations concerning the duties of the commander, an idea already captured in the Geneva Conventions[84] and their predecessors. The provisions of the LOAC determine when, in the course of events, command responsibility may arise – namely, when a subordinate "was committing or was going to commit"[85] a prohibited act. The words "was going to commit" expressly show that the obligation arises prior to the event, subject to the commander's actual or presumed knowledge about the event and the possibility of intervention. Given that these liabilities are set out in the LOAC (a body of law that is civil in nature), they must be understood as a concretization of the State's obligation to prevent war crimes. In other words, if an act is wrong when committed by an individual State agent as part of his or her duties,

78 This is already a legal obligation under Article 8 of the UN Convention on Biological Diversity, above note 13. See also PERAC, above note 15, Principle 4; K. Hulme, above note 42, p. 18.

79 See e.g. UN Convention on Biological Diversity, above note 13, Art. 17.

80 For a regional treaty obligation to this effect see e.g. Bern Convention on the Conservation of European Wildlife and Natural Habitats, UKTS 56, 1979 (entered into force 1 June 1982), Art. 3.

81 This distinction aligns with the distinction between education and training highlighted by Prescott. According to Prescott, the military sees education as being "primarily geared towards imparting information to students and fostering the development of general intellectual skills", and training as being "focused on specific skill development in the context of specific mission situations". Jody M. Prescott, *Armed Conflict, Women and Climate Change*, Routledge, New York, 2019, p. 206.

82 The decisions made by the actors will also be influenced by their skills and the training they have received. Therefore, parties are obliged to have legal advisers available "at all times" as well as "in time of armed conflict": AP I, Art. 82. The question arises as to what extent such legal advisers ought to have at least some basic understanding of IEL to convincingly provide protection for the environment.

83 M. Bothe, above note 56, p. 276.

84 Geneva Convention I, Art. 45; Geneva Convention II, Art. 46.

85 AP I, Art. 86.

to the extent that individual criminal responsibility can be incurred, then it must be a civil wrong on the part of the State in question. This is the basis for the argument that there is indeed a general obligation to prevent war crimes under the LOAC.

Meting out punishments after a breach of the LOAC does not address the commander's responsibility to *prevent* the breach.[86] This is further underlined by Jarvis when she calls this obligation "command responsibility in real time".[87] This is to say that when a war crime causing environmental harm is almost certainly going to occur, there is an obligation on particular actors with a nexus to the scene to suppress the commission of such acts.

Flowing from this general obligation to prevent all war crimes, it is here argued that because of the now recognized general duty of due regard for the natural environment, the obligation to prevent comes into play prior to an act conclusively having caused "widespread, long-term and severe damage".[88] Given the magnitude of anticipated damage to the environment, the obligation to prevent will be activated immediately when such harm can be foreseen. On this note, it is now time to better understand the notion of due diligence, and to examine how it relates to the preventive obligations. In the following section, this discussion begins from the perspective of the PERAC principles.

Understanding due diligence and the obligation to prevent harm

After more than ten years of deliberations, the ILC adopted the final version of the PERAC[89] in late 2022. On 7 December 2022, the United Nations (UN) General Assembly took note of the PERAC without a vote.[90] The twenty-seven principles that have crystallized address the prevention of environmental harm in relation to armed conflict from the perspective of general international law.[91] Thus, the temporal scope of the PERAC is explicitly set to be "before, during or after an armed conflict, including in situations of occupation".[92] In terms of preventive obligations, these are largely captured in Part 2, which also contains the principles of general application.[93] The underlying assumption for the principles

86 ICTY, *Prosecutor v. Blaškić*, Case No. IT-95-14-T, Judgment, 3 March 2000, 2004, para. 789.

87 Michelle J. Jarvis, "Prosecuting Conflict-Related Sexual Violence Crimes: How Far Have We Progressed and Where Do We Go from Here? Some Thoughts Based on ICTY Experience", in Dale Stephens and Paul Babie (eds), *Imagining Law, Essays in Conversations with Judith Gardam,* University of Adelaide Press, Adelaide, 2016, p. 127.

88 J.-M. Henckaerts and D. Constantin, above note 20, p. 481.

89 PERAC, above note 15.

90 UNGA Res. A/RES/77/104, 19 December 2022.

91 Britta Sjöstedt and Anne Dienelt, "Enhancing the Protection of the Environment in Relation to Armed Conflicts – the Draft Principles of the International Law Commission and Beyond", *Goettingen Journal of International Law*, Vol. 10, No. 1, 2020.

92 PERAC, above note 15, Principle 1.

93 The heading for this part was originally proposed to be "Preventive Measures". ILC, *Third Report of the Special Rapporteur, Ms Jacobssen, on the Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/700, 2016, Annex I.

in this part is that they take effect before armed conflict arises, although "not all draft principles would be applicable during all phases".[94] Principle 2 states that measures must be taken to prevent, mitigate and remediate harm to the environment in relation to armed conflict.[95]

The notion of prevention requires a few general remarks. First, prevention must be seen as a general positive obligation to *anticipate* risks in order to protect the environment.[96] Second, in terms of transboundary harm from lawful activities, the anticipation of environmental risk arises from the foreseeability of (1) a high probability of significant transboundary harm or (2) a low probability of disastrous transboundary harm.[97] Third, it is noteworthy that considerations of preventing environmental damage have contributed to the development of the general due diligence principles under international law.[98] Fourth, emanating from IEL, preventive obligations have arguably by now developed into general principles of international law.[99] Fifth, there is a link between prevention and due diligence, but the concepts are distinct and must therefore be treated separately.

Due diligence, increasingly referred to in areas of international law, can be understood to mean a State obligation (1) to apply the best efforts available to take effective measures, and (2) also to actively search for such measures. The International Law Association's (ILA) Study Group on Due Diligence in International Law regards due diligence as a standard of conduct (rather than of result).[100] Furthermore, to establish if the due diligence obligation is met, it is only assessed whether the State has taken sufficient action against the risk that a certain activity causes – the actual damage is not part of the assessment.[101] Thus, as pointed out by Bothe when he outlines the "duty of due diligence under IEL and presumably peace time", the obligation to ensure due diligence entails (at

94 ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries* UN Doc. A/77/10, 2022 (PERAC Commentary), p. 98, available at: https://legal.un.org/docs/?path=../ilc/texts/instruments/english/commentaries/8_7_2022.pdf&lang=EF.

95 PERAC, above note 15, Principle 2.

96 L.-A. Duvic-Paoli, above note 36, p. 9.

97 ILC, *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, with Commentaries,* UN Doc A/56/10, 2001, commentary to Art. 2, p. 152, para. 3. In this regard, compare the high threshold for prohibiting environmental damage under the LOAC, discussed above, note 35 and the accompanying text.

98 These can be seen either as customary obligations of due diligence or as a general principle of international law. Leslie-Anne Duvic-Paoli and Mario Gervasi, "Harm to the Global Commons on Trial: The Role of the Prevention Principle in International Climate Adjudication" *Review of European, Comparative and International Environmental Law*, 2022, p. 2.

99 L.-A. Duvic-Paoli, above note 36, p. 81. In relation to international environmental law, the preventive obligation originates from the no-harm principle, as once crafted in the *Trail Smelter* arbitration: *Trail Smelter Arbitration* (*United States v. Canada*), 3 UN Rep. Int'l Arb. Awards 1905 (1941). See also Philippe Sands, Jacqueline Peel, Adriana Fabra and Ruth Mackenzie, *Principles of International Environmental Law*, 4th ed., Cambridge University Press, Cambridge, 2018, pp. 198, 211–213.

100 Tim Stephens and Duncan French, *ILA Study Group on Due Diligence in International Law: Second Report*, 1 July 2016; Lisa Grans, "The Concept of Due Diligence and the Positive Obligation to Prevent Honour-Related Violence: Beyond Deterrence", *International Journal of Human Rights*, Vol. 22, No. 5, 2018, p. 735.

101 L.-A. Duvic-Paoli, above note 36, p. 183.

least) three threshold questions: (1) the level of damage that may be expected, (2) the likelihood that it will occur, and (3) the level of diligence that may be due.[102] A protective threshold operates in two contexts: it can help to determine the wrongfulness of actual damage *ex post*, but of more importance for this discussion is that it simultaneously serves as a threshold – at a lower level – *ex ante* when assessing the risk that gives rise to the preventive obligation.[103] In other words, "[t]he threshold will be lower when assessing whether the conditions triggering prevention were met given that the objective is not to determine wrongfulness but rather to *anticipate damage*".[104]

Further to the standard of due diligence, the obligation to prevent damage is an obligation of result, allowing it to encapsulate due diligence – that is, combining obligations of conduct with obligations of result. It is the element of due diligence that equips the obligation to prevent environmental harm with continuity. As noted by Duvic-Paoli, "[r]are is the [environmental] damage that has a clear start and end point: environmental harm is often a continuous act, and the complexity of environmental damage calls for a continuous effort of harm prevention, reduction and elimination".[105] This aspect of continuity separates the preventive obligation into three phases with different characteristics: these are imminence, emergency and response. These phases are not chronological in a strict sense; rather, they help to develop an understanding of an ongoing obligation in relation to events that can be expected to be unfolding. Imminence commences when the likelihood of a harm occurring can be assessed. Imminence therefore puts the attention on the likelihood of the risk occurring, rather than on its proximity in time as such.[106] Preventive obligations in the emergency phase concern the avoidance of damage that is almost certain to occur in the near future. Although damage may happen suddenly, this does not automatically make it entirely unexpected;[107] thus, a certain amount of preparedness, executed beforehand, is required. Lastly, the response phase captures the fact that although the harm has already started to convert into actual environmental damage, there is still scope to prevent even more excessive destruction. Not only is there scope, but there is also a legal obligation, because the obligation to prevent harm remains of an ongoing character.[108] This ongoing character of the obligation to prevent harm emanates from the rules of State responsibility; as long as the environmental damage is there, the preventive obligation remains in force.[109] "The principle of prevention dictates that risks are assessed and monitored at regular intervals to judge whether the criteria of foreseeability and magnitude that

102 M. Bothe, above note 56, p. 272.
103 L.-A. Duvic-Paoli, above note 36, p. 184.
104 *Ibid*., p. 185 (emphasis added).
105 *Ibid*., p. 197.
106 *Ibid*., p. 190.
107 *Ibid*., p. 191.
108 *Ibid*., p. 192.
109 ILC, *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, UN Doc A/56/10, 2001, Art. 14(3).

trigger prevention are met."[110] It is worth noting that the threshold level for when anticipated harm triggers the preventive obligation would be shifted in favour of the environment if the effects of harm on present as well as future generations were taken into account.[111] It must be considered beyond doubt that States have yet to explore and advance this three-phased nature of preventive measures with respect to environmental harm in relation to armed conflict to the maximum extent possible.

Conclusions

In relation to armed conflict, the environment is doubtless *prima facie* a civilian object. Therefore, the tests that must be carried out to ascertain that an attack is lawful are the same as when any civilian object is assessed to establish whether it is indeed a military objective. To effectively protect the environment, preventive obligations that must be implemented well before the outbreak of an armed conflict are essential. This refers to measures that should be taken to ensure that war crimes do not occur in the first place. The obligation to prevent harm is a distinct, separate obligation in addition to the obligation to prosecute war crimes after they have occurred. Therefore, these two obligations each require their own separate response.

The emphasis in this article has been on the obligation to prevent harm. Under the LOAC, this obligation is distinctive and differs from the obligation of care. The preventive obligation has the combined force of an obligation of conduct and an obligation of result that is civil in nature, which means that it encapsulates due diligence aspects. This higher level of an obligation of result is called for because of the extreme seriousness of the harm that is sought to be prevented. It goes beyond a duty of care, since the character of the obligation to prevent harm exceeds the obligation of conduct by adding the obligation of result.

The above discussion has established that there is indeed a general State obligation to prevent all war crimes, and this article argues further that this also requires the application of the LOAC to foreseeable environmental harm, to ensure that war crimes are duly prevented, including war crimes that disproportionally impact the environment. In addition to this first level of preventive obligations, the LOAC also establishes obligations to prevent the occurrence of war crimes closer to the event – that is, when armed conflict has erupted. At this stage, command responsibility may arise if a commander or superior has failed to prevent a war crime about which he or she had actual or presumed knowledge. The duty to suppress such acts means first that systems of disciplinary measures need to be in place, and second that they must be made use of, not least when the war crime disproportionately affects the environment. This would include war crimes such as the indiscriminate destruction of livelihoods or

110 L.-A. Duvic-Paoli, above note 36, p. 197.
111 *Ibid.*, p. 188.

water and soil. There is clearly an obligation on States to prevent the occurrence of such war crimes in the first place; therefore, States have the obligation to take certain measures in advance. This would mean that mechanisms which enable an assessment of foreseeable environmental risk should be established beforehand, in order for a State to fully comply with its preventive obligations under the LOAC. Such mechanisms would be in the area of institution-building and management[112] and would entail monitoring of indicators pertaining to the status of, for instance, air, water, soil, agricultural products and human health.[113]

The obligation to prevent environmental harm must be seen as an obligation in three phases: imminence, emergency and response. The preventive obligation arises immediately when a risk of damage can be anticipated; the emergency phase is when the likelihood of harm arising is foreseeable and is almost certain; and lastly, prevention under the response phase concerns activities to suppress further harm when the anticipated damage has begun to materialize.

It is clear from the discussion above that the general obligation to prevent war crimes (beforehand, and closer to the event) provides protection under the LOAC that extends to the environment. Furthermore, the obligation to prevent harm closer to the event is better understood as a three-phased obligation, guided by the relevant general principles of international law. Given that the principles in the PERAC apply before, during and after armed conflict, they re-emphasize that environmental harm in relation to armed conflict must be approached holistically. This in turn brings to the forefront the obligation to continue the analysis of what preventive actions are required throughout the unfolding of events, underlining the ongoing character of the obligation to prevent environmental harm. The ongoing nature of harm itself may be difficult to discern in fast-moving events that cause damage – but when the harm which should be prevented materializes over time, possibly even "widespread, long-term and severe" in scale and scope, then the obligation remains in force for this whole period. PERAC Principle 2 emphasizes prevention and mitigation;[114] this can be seen to be in line with the understanding of command responsibility, where the responsibility is not limited to activities well before the conflict has erupted, but also gives rise to the responsibility to minimize damage, as mitigation is expressly required. This is the part of the obligation that applies should environmental damage already have begun to materialize.

The obligation to prevent environmental harm in relation to armed conflict has not yet been implemented to its fullest. Bearing in mind that the obligation to

112 This would include developing guidelines and procedures for administrative routines.

113 Authorities should engage with the private sector, civil society and, if relevant, UN missions in their institution-building, which may take place at the global as well as the regional level.

114 While the ILC has pointed out that the PERAC contains provisions of different normative value (PERAC Commentary, above note 94, p. 95), most PERAC principles that apply during armed conflict are "customary rules of international law which have been clarified in a contemporary context of environmental protection" (Marja Lehto, "Armed Conflicts and the Environment: The International Law Commission's New Draft Principles", *Review of European Community and International Environmental Law*, Vol. 29, No. 1, 2020, p. 74). The same cannot automatically be concluded for the remaining provisions, which remain based on existing treaties or other authoritative sources (*ibid.*).

prevent *all* war crimes requires States to take measures beforehand, applying the lens of IEL reveals that there is a due diligence onus on States to examine and revise State practices concerning their military manuals and rules of engagement regarding environmental harm. It has been argued that undertaking such activities is an essential part of fulfilling the general obligation to take appropriate measures in advance to prevent all war crimes, including those that are anticipated to constitute environmental harm.

International Review of the Red Cross (2023), **105** (924), 1227–1237.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000371

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The Climate and Environment Charter for Humanitarian Organizations: Strengthening the humanitarian response to the climate and environment crises

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Abstract

Since its launch in 2021, the Climate and Environment Charter for Humanitarian Organizations (the Charter) has been signed by hundreds of humanitarian actors across the world, including local and national organizations, United Nations agencies, National Red Cross and Red Crescent Societies, and large international NGOs. The Charter's development grew out of a sector-wide recognition that humanitarians have a role to play in addressing the crises of climate change and environmental degradation, and that fulfilling this role would entail changing how they work. Two years into its existence, the Charter has helped build momentum towards this change and has provided a useful measurement tool for how much remains to be done.

This paper traces the origins, inspiration and process of the Charter from the perspective of the present authors, who co-led the Charter's development. The article highlights some of the challenges that we faced and how these were addressed. In taking stock of progress towards the Charter's goals, the article flags areas where further effort is needed to adequately strengthen the humanitarian response to the climate and environmental crises.

Keywords: climate change, Climate Charter, climate risk, environmental degradation, humanitarian action, climate adaptation.

Climate change and environmental degradation have severe humanitarian consequences. They threaten lives and livelihoods and water and food security, worsen public health, increase displacement, and perpetuate vulnerabilities and inequalities.[1] Yet, until relatively recently, climate change and environmental degradation have remained peripheral to the humanitarian agenda, were seen largely as development issues and were most often considered through attempts to reduce the environmental impact of humanitarian action.[2] The International Red Cross Red Crescent Movement (the Movement) was an exception to this, notably steered by the Red Cross and Red Crescent Climate Centre, established in 2002 to help the Movement and its partners reduce the impacts of climate change and extreme weather events on vulnerable people.[3]

Things have shifted in the last five years beyond the Movement as well. In 2019, the United Nations (UN) High Commissioner for Refugees appointed a special adviser on climate action. Other organizations and networks have developed institutional commitments on this issue: in 2020, InterAction and more than

1 Hans-Otto Pörtner *et al.* (eds), "Summary for Policy Makers", in Hans-Otto Pörtner *et al.* (eds), *Climate Change 2022: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge and New York, 2022.

2 Paul Knox Clarke, *Climate Change and Humanitarian Action*, ADAPT Initiative, Oxford, 2021.

3 Kirsten Rosenow-Williams, "Climate Change and the International Red Cross/Red Crescent Movement", *Moving the Social – Journal of Social History and the History of Social Movements*, Vol. 54, 2015. See also: Red Cross and Red Crescent Climate Centre, "Where We Work", available at: www.climatecentre.org/where-we-work/ (all internet references were accessed in August 2023).

eighty of its members adopted a Climate Compact, ten members of the French Réseau Environnement Humanitaire co-signed a Statement of Commitment on Climate by Humanitarian Organizations, and Médecins Sans Frontières signed its Environmental Pact.[4] During the same period, several organizations emphasized the importance of addressing the impacts of climate change on humanitarian action in their strategies.[5] Sound technical guidance on greening operations and on integrating climate risk management into humanitarian programmes was produced.[6] This shift was reflective of the progressive recognition that the climate and environment crises are humanitarian crises and that humanitarian organizations have to adapt their responses and ways of working.

Despite this progress, an overarching, high-level and collective commitment from the humanitarian community to improve its practices and to do more to tackle the climate crisis, and that could more comprehensively capture and reflect progress from across the sector, was still missing. This recognition triggered the development of the Climate and Environment Charter for Humanitarian Organizations (the Charter).[7]

This article outlines the Charter's contents, its inspiration and the process that led to its creation, from the perspective of the present authors, who co-led its development. It highlights some of the challenges we faced and reports on progress achieved since the Charter was opened for adoption by the humanitarian sector in May 2021.

The Charter, in brief

The Charter is a short and aspirational text that promotes a transformational change across the humanitarian sector. Its seven commitments are intended to guide humanitarian organizations in stepping up and improving their humanitarian action to address the climate and environmental crises and reduce humanitarian needs. Each commitment is accompanied by a short explanatory text. Further explanation and guidance, as well as recommendations on tools and considerations on targets, are provided on the Charter website.

The first two commitments, organized hierarchically, represent the backbone of the Charter. The first commitment is to step up the response to

4 InterAction, *The NGO Climate Compact; Commitments towards Environmental Action and Sustainability 2020–2022*, Washington, DC, 2020; Réseau Environnement Humanitaire, *Statement of Commitment on Climate by Humanitarian Organisations*, 2020; Médecins Sans Frontières, *The Environmental Pact*, Geneva, 2020.

5 See, for instance, International Council of Voluntary Agencies (ICVA), *ICVA 2030 Strategy: A Collaborative Future for Effective Humanitarian Action*, Geneva, 2022; International Federation of Red Cross and Red Crescent Societies (IFRC), *Strategy 2030: Platform for Change: Global Reach, Local Action*, Geneva, 2018; International Committee of the Red Cross (ICRC), *ICRC Strategy 2019–2024*, Geneva, 2019.

6 For examples of existing guidance, see Climate and Environment Charter for Humanitarian Organizations, "Guidance", 2021, available at: www.climate-charter.org/guidance/.

7 Climate and Environment Charter for Humanitarian Organizations, 2021, available at: www.climate-charter.org/wp-content/uploads/2022/05/ClimateEnvironmentCharter-EN.pdf.

growing humanitarian needs and to help people adapt to the impacts of the climate and environmental crises. This entails focusing on the reduction of risks and vulnerabilities to shocks, stresses and longer-term changes through an increased focus on climate change adaptation, disaster risk reduction and anticipatory action, with particular emphasis on those most at risk because of individual characteristics – such as gender, disability or legal status – or because of the situation in which they live – such as poverty, migration or armed conflict. Signatories commit to ensuring that their programmes are based on sound risk analyses and are informed by the best available science and data, and local and indigenous knowledge.

In line with the principle of "do no harm", the second commitment is to maximize the environmental sustainability of humanitarian work while maintaining the ability to provide timely and principled humanitarian assistance. Organizations commit to implementing sound environmental policies and to assessing the immediate and longer-term environmental impact of all their work. They also commit to measuring and significantly reducing their greenhouse gas emissions, in line with global goals, and to using natural resources and managing waste responsibly.

The next four commitments focus on *how* to achieve these ambitions, from embracing local leadership and building knowledge to nurturing collective action and leveraging the influence of the humanitarian sector. Signatories pledge that their action will be guided by the leadership, experience and knowledge of local actors and communities, that they will ensure meaningful and inclusive participation of communities and local actors at all stages of the response, and that they will invest in locally led, durable responses. They also commit to enhancing their understanding of climate and environmental risks and improving their use of science, evidence, technology and communication. Organizations promise to enhance cooperation and share data and analysis across the humanitarian system, in particular between local, national and international actors, and to work far beyond the sector to ensure a continuum of efforts to manage risks and develop sustainable interventions. They commit to informing and influencing decision-making with evidence of people's experience and the current and future humanitarian consequences of the climate and environmental crises, and to promoting the implementation of relevant international and national laws, standards, policies and plans for stronger climate action and environmental protection.

The last commitment is to develop targets and measure progress in the implementation of the Charter. This means that within a year of adoption, each signatory of the Charter must develop its own specific time-bound targets that reflect its scale, capacities and mandate. Organizations commit to reporting transparently on the impact of their work on the climate and environment and to seeking feedback from the people they serve. This commitment is intended to rally collective action across the sector, and builds accountability into the signing process. In recognition of the resources and effort necessary to realizing the Charter's ambitions, the text of this last commitment highlights that the support

of donors is essential to shifting ways of working as this entails changes in mindset and approaches, as well transition costs.

The genesis and the process

The development of the Charter was co-led by the International Committee of the Red Cross (ICRC) and the International Federation of Red Cross and Red Crescent Societies (IFRC). The idea was born in early 2019, as the ICRC started paying closer attention to the impacts of climate change and environmental degradation on conflict-affected communities, perhaps because unlike at the IFRC, the topic had not been at the top of the ICRC's agenda before, and teams who were witnessing dire humanitarian impacts were calling for guidance on their role in addressing the climate and environment crisis. The 1994 *Code of Conduct for the International Red Cross and Red Crescent Movement and Non-Governmental Organisations in Disaster Relief* (Code of Conduct) provided inspiration for what a sector-wide document might look like; over the last three decades, its clear and simple principles, endorsed by nearly 1,000 organizations, have come to define the way humanitarian organizations work.[8] There was a clear sense that something similar would help steer the humanitarian response to the climate and environment crises. This feeling was apparent across the sector, surfacing in publications, events, and discussions between humanitarian actors in the lead-up to the Charter's launch.

The IFRC was an obvious partner for this project, bringing a wealth of knowledge and experience through many years of work with National Red Cross and Red Crescent Societies (National Societies). It had long followed climate policy discussions and had tried to ensure that the humanitarian perspective was reflected in these exchanges, and it felt that this call for a clearer vision and framework strongly resonated with questions that were regularly asked in climate policy circles, and notably at the Conference of Parties to the United Nations Framework Convention on Climate Change. There, the IFRC often had to explain the role of National Societies and the humanitarian sector in responding to the climate crisis.

As co-drafters, the present authors took inspiration from the development of the Code of Conduct – a short, sector-wide set of principles and commitments – and so turned to the statutory meetings of the Movement to formally launch the process to develop a Charter. At the 33rd International Conference of the Red Cross and Red Crescent in December 2019, the ICRC and IFRC, joined by ten National Societies, took a pledge to urgently adapt their own humanitarian work and scale up activities that contribute to strengthening the resilience of communities to climate risk and environmental degradation.[9] In the

8 IFRC and ICRC, *The Code of Conduct for the International Red Cross and Red Crescent Movement and Non-Governmental Organisations (NGOs) in Disaster Relief*, 1994. List of signatories available at: www.ifrc.org/code-conduct-signatories?webform_submission_value=&webform_submission_value_1=&page=0.

9 33rd International Conference of the Red Cross and Red Crescent, "Strengthening the Resilience of Communities to Climate Change and Environmental Degradation through Climate-Smart Humanitarian Action", Pledge Number OP330098, 11 December 2019.

same pledge, the ICRC and IFRC committed to leveraging the leadership of the Movement in order to nurture a consensus on the humanitarian response to the climate and environment crises and develop a climate and environment charter that would be made available to the wider humanitarian sector for adoption in the spirit of the Code of Conduct.

To guide the process, we decided to create an Advisory Committee that would both provide expertise and ensure sectoral representation. We invited representatives of local, national and international NGOs, UN agencies and National Societies, as well as academics, researchers and experts in the humanitarian, development, climate and environmental fields, to join. The Committee represented a number of humanitarian networks, including the International Council of Voluntary Agencies (ICVA), the Alliance for Empowering Partnership, InterAction, the Environment and Humanitarian Action Network, the Steering Committee for Humanitarian Response and the Inter-Agency Standing Committee (IASC) sub-working group on climate change.

The Advisory Committee proved immensely helpful, remaining engaged throughout the process and making available its expertise and that of its networks. With its guidance, a zero draft that captured core commitments on climate and the environment was developed by the IFRC and ICRC in 2020. It was used as the basis for consultations with the humanitarian sector.

The consultation process

Given the ambition to develop a charter for and with the humanitarian sector – in all of that sector's diversity in terms of scale, mandates and capacities – it was essential to listen to and reflect with humanitarian workers from all over the world. This is also why the finalized Charter includes no specific reference to the Movement and bears no emblem. The goal was to aim for a sector-wide document from the beginning, through the Charter's development and in crafting its independent identity.

Over the course of four months, from December 2020 to March 2021, the drafting team held nineteen live virtual regional and national consultations, and two open consultations for the whole humanitarian sector. Several consultations were organized in collaboration with humanitarian networks, including regional consultations in four languages organized with ICVA for its members, NGO partners and NGO networks, and with the Movement. Consultations were also organized with InterAction, the IASC sub-working group on climate change, the Réseau Environnement Humanitaire, UN agencies, and local NGOs in India and South Sudan, in collaboration with the All India Disaster Mitigation Institute and the South Sudan NGO Forum.

Live consultations were complemented by bilateral discussions and an online questionnaire that was made available in English, French, Arabic and Spanish. The draft was also shared widely through the networks of various organizations and the Advisory Committee. In total, over 200 people participated in the consultations and more than 150 organizations provided feedback on the

Figure 1. The process to develop the Charter.

first draft. This led to a revised version of the Charter, which was redistributed across the humanitarian sector for final comments. A small number of organizations provided further feedback, which led to minor revisions. The feedback received throughout the process was presented in a public report.[10]

Listening to the humanitarian sector

Humanitarian workers who joined the consultations welcomed the project with enthusiasm and provided feedback that led to a stronger text. There were several remarks on the overall tone and substance, with a call to emphasize the existential nature of the crises and the need for radical transformation. Important discussions also centred on whether the Charter should take a more explicit position on climate justice and the responsibility of rich countries to address the consequences of the climate crisis. Many flagged that the Charter would be a useful tool for internal advocacy for stronger environmental policies within organizations, but that implementation would require tools, guidance and support.

The first commitment attracted the most specific feedback – this was expected, given its focus on the core work and mandate of humanitarian organizations. Comments focused on elements that needed to be further emphasized, such as the importance of taking preventive measures and reducing risk, and on clarifying the role of humanitarian actors in meeting rising humanitarian needs and helping people adapt to a changing climate, acknowledging that humanitarian action alone could not support holistic climate adaptation.

Significant feedback was also provided on the second commitment, on the reduction of the climate and environmental impact of humanitarian action. It was deemed important to clarify that these steps could not be to the detriment of timely humanitarian responses. The initial draft included a commitment to achieve net zero greenhouse gas emissions by 2050, which was thoroughly discussed, with diverging perspectives. Many were worried that this target was not ambitious enough, given the risks attached to unmitigated climate change and the determination to lead by example. Others, mostly smaller-scale organizations

10 ICRC and IFRC, *Consultations on the Climate and Environment Charter for Humanitarian Organizations: Summary of Feedback and Revisions: Consolidated Feedback on the Climate and Environment Charter for Humanitarian Organizations Gathered during Consultations Conducted between December 2020 and March 2021*, Geneva, 2021.

with limited resources, were concerned that the inclusion of any specific targets would make adoption more difficult, given their limited capacity to invest in reducing their emissions. In addition, several contributors flagged that a commitment to net zero would be difficult to meet in isolation even for larger organizations, as it would be highly dependent on support from and cooperation with other sectors – such as the manufacturing, shipping and packaging industries, to reduce the environmental footprint of the goods that humanitarian organizations buy. There were several questions about the ethics of using carbon offsets and other tools to achieve this objective, and a call for explicitly referring to the centrality of reducing greenhouse gas emissions in the commitment itself.

The third (on working with local communities and leadership) and seventh (on targets to measure implementation) commitments were the two others that attracted the most feedback. There were considerations on how to go beyond slogans with regard to working with communities and local leadership, as well as heated discussions on whether the Charter should include numerical targets.

The feedback received from the humanitarian sector led to several changes and to a stronger Charter. The introduction was changed to further emphasize the scale and extreme urgency of the crisis, and the need for a drastic reduction in greenhouse gas emissions and strengthening of environmental protections. The revised text also recognizes that those who have contributed least to the problem are hit hardest by its impacts, and includes a call to address loss and damage associated with the effects of the climate and environmental crises.

The reference to the 2050 target of net zero emissions was removed to address concerns both that it is not ambitious enough, and that its inclusion would complicate adoption. On carbon offsets, the text specifies that high-quality reduction projects to offset unavoidable emissions might complement, but not replace, reduction efforts. The commitment to working closely with local communities was reinforced to highlight their lead role.

When it came to targets, it was decided that the text would not include numerical ones because participants flagged that the capacity and mandate of local, national and international humanitarian organizations would influence the type of targets that they could realistically adopt and live up to. It was strongly felt that predetermined targets would exclude some organizations or result in less ambitious text, as a common denominator would need to be found. At the same time, participants emphasized the importance of ensuring that the Charter would lead to real changes: for this reason, the final text made it clear that organizations were committing to developing their own targets, informed by science, and to reporting publicly on them. It was also agreed that guidance on and examples of suitable targets would be provided on the Charter website.

Rallying the humanitarian sector

On 21 May 2021, the text was opened for adoption by all humanitarian organizations, and was signed by the IFRC and the ICRC. The response was

Table 1. *Breakdown of organizations that provided feedback*

National Societies	33
International NGOs	29
National NGO and INGO local/regional chapters	57
Humanitarian networks	9
UN agencies	13
Think tanks, research organizations, others	15

Table 2. *Diversity among signatories*

Signatory breakdown by type (as of 5 July 2023)	**Number**	**Percentage**
Humanitarian networks	13	4
Research organizations, think tanks, consultancies	13	4
National Societies	133	36
National and local NGOs (including INGO local/ regional chapters)	113	30
INGOs	92	24
UN agencies, international and intergovernmental organizations	6	2
Total	**370**	**100**
Geographic breakdown of local and national organizations and National Societies*	**Number**	**Percentage**
Africa	84	34
Asia	41	16
Europe	57	23
North Africa and Middle East	30	12
North and Central America	23	9
South America	10	4
Oceania	7	2
Total:	**252**	**100**

* The geographic scope of local and national organizations represents a rough proxy for that of all signatories. Many international NGOs and organizations, while headquartered in major capitals, have global or multinational operations. Including only their headquarter locations would skew the geographic distribution of signatories.

remarkable, with more than 100 organizations and networks joining during the first year. Since then, the number of signatories has been steadily growing, reaching over 350 by the second anniversary of the Charter's launch.

As the number of signatories rose, governments began to take notice and to ask how they could be involved to show their support for its commitments. The Charter was designed for and by humanitarian organizations, but it includes clear references to the role of others in supporting and enabling its transformative potential. The text highlights the importance of mobilizing urgent and more ambitious climate action and environmental protection. For this, it is essential to have governments and other decision-makers on board. Furthermore, implementing the Charter requires financial and technical support, which requires the support of donors.

In light of the willingness and interest of governments to express their support, in autumn 2021 it was decided to open a "supporters" category through which States, local and regional governments, government agencies and departments, and private foundations could indicate their support. Since then, ten States and the European Union have joined as supporters. Other complementary initiatives have also emerged. In March 2022, during the European Humanitarian Forum, humanitarian donors were invited by the European Commission and France to sign up to a new Declaration on Climate and the Environment.[11] The Declaration echoes the Charter, as its signatories commit to investing in, preparing for, anticipating and responding to disasters, improving cooperation and partnerships at all levels, and reducing the environmental impact of humanitarian activities.

Supporting signatories

It was always clear that the Charter itself would be a first step towards a better humanitarian response to the climate and environment crises and that meaningful change would hinge on the translation of its commitments into reality. This is why the commitment to set concrete targets and work towards their implementation is so critical. Doing so helps organizations clarify their objectives, orient their efforts and, by sharing those efforts publicly, learn from one another. By March 2023, slightly more than 10% of signatories have shared their targets.[12]

This is a good start, but it is insufficient. On the first anniversary of the Charter, the present authors surveyed humanitarian organizations to better understand why so few had defined their targets and how they could be further supported to implement the Charter. We received nearly 100 responses from

11 *Humanitarian Aid Donors' Declaration on Climate and Environment*, French Presidency, Council of the European Union and European Commission, 2022.

12 For submitted targets, see Climate and Environment Charter for Humanitarian Organizations, "Targets", 2021, available at: www.climate-charter.org/targets/.

people working in over 100 countries and in every region of the world for international, national and local NGOs and National Societies. We heard calls for help with developing concrete targets – reflected in the still-limited number of organizations that have submitted them so far – compiling successful examples and case studies, and developing tools and technical standards for specific sectors, such as water or food. We also heard that peer-to-peer exchanges and direct assistance to develop targets and implementation plans were needed.

In other words, humanitarian organizations were asking for hands-on support to live up to their commitment and adapt their programmes and ways of working. We have assessed that such a service could be provided by two complementary components: a small, independent, virtual secretariat acting as a referral service that will guide signatories towards existing resources, assess support needs on an ongoing basis, share information and represent the Charter externally, and a constellation of experts and resources to which the secretariat can refer signatories.

The latter is already in progress, with a mapping of existing resources and experts who can potentially support signatories as they set targets and implement programmes commissioned by the Directorate-General for European Civil Protection and Humanitarian Aid Operations.[13] At the time of this writing, conversations on support towards a secretariat administered by ICVA and governed by the IFRC, ICRC, ICVA and two rotating members are ongoing.

We hope that by setting up such a structure, we can speed up the implementation of the Charter – an urgent endeavour, given the state of the climate and the environment and the humanitarian consequences that these crises are generating. It will be worth taking stock of progress in a few years by assessing what has changed in the sector and the extent to which organizations have adapted their practice to better meet the needs of communities facing growing climate and environmental risks, to reduce their environmental footprint, and to mobilize those who can strengthen climate action and environmental protection in humanitarian crises.

13 Marion Reinosa and Paul Knox Clarke, *Implementing the Climate Charter: Analysis and Mapping of Expertise Available to Signatories on the Implementation of the Climate and Environment Charter for Humanitarian Organizations*, INSPIRE+ Consortium, 2023.

International Review of the Red Cross (2023), **105** (924), 1238–1266.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000449

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Re-evaluating international humanitarian law in a triple planetary crisis: New challenges, new tools

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Abstract

In the face of the triple planetary crisis, which includes climate change, biodiversity loss and environmental degradation, there is growing recognition that the environment needs to be re-evaluated and better protected. Recent developments, such as a values assessment by the Intergovernmental Science-Policy Platform on

† Research for this article has been funded by the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning, Project 2019-01404, "The International Dimension of Environmental Peacebuilding", and Essex University's Impact Acceleration Accounts (IAAs) programme. IAAs are block awards made to research organizations by the Economic and Social Research Council, part of UK Research and Innovation, with the aim of speeding up the impact of research.

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Biodiversity and Ecosystem Services (IPBES),[1] the concept of biocultural rights and the acknowledgment of granting rights to nature, emphasize the intrinsic value of the environment and endorse the understanding of the interconnectedness between humans and non-human entities. These developments are also increasingly evident in legal frameworks; for instance, several domestic legal systems now accept the rights of nature and grant legal standing to natural entities. This expansion in our understanding of the environment challenges the traditional anthropocentric focus of international law, which has primarily prioritized human rights and interests, perceiving humans as having dominance over nature and the liberty to harness its resources. Simultaneously, international environmental law is increasingly recognizing the interdependence of ecosystems and species. This acknowledgment drives the promotion of approaches to environmental management and conservation that centre around ecosystems and local communities. The present article looks at how to reconcile these heightened environmental values and the legal norms in armed conflict by examining two examples: the safeguarding of protected areas and the restoration of the environment post-conflict. By analyzing the changing values and legal developments in this area, the article offers legal and practical tools to support the protection of nature's intrinsic value in future warfare.

Keywords: climate change, biodiversity, armed conflict, environment, protected areas, reparations.

Introduction

The present era is defined by a "triple planetary crisis" of climate change, rapid biodiversity loss and severe global pollution. As a consequence, the planet is exceeding the boundaries of its adaptability and resilience.[2] These combined impacts of the triple planetary crisis create a vicious cycle: as ecosystems become more vulnerable, they struggle to cope with additional stressors and disturbances, while the loss of biodiversity reduces the capacity of ecosystems to adapt to climate change, making them more susceptible to further degradation.[3] This vulnerability in turn affects not only the survival of countless plant and animal species but also the services that ecosystems provide, such as clean air and water, food production, climate regulation and natural disaster mitigation. Thus, the triple crisis has serious implications for both human and non-human survival.[4]

It is no wonder, then, that people around the globe are re-evaluating their relationship with the environment. For example, there is a growing movement to

1 Patricia Balvanera, Unai Pascual, Michael Christie and David González-Jiménez (eds), *Methodological Assessment Report on the Diverse Values and Valuation of Nature of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*, IPBES Secretariat, Bonn, 2022 (IPBES Values Assessment).

2 Johan Rockström *et al.*, "A Safe Operating Space for Humanity", *Nature*, Vol. 461, 24 September 2009.

3 Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 5*, Montreal, 2020.

4 David Passarelli, Fatima Denton and Adam Day, *Beyond Opportunism: The UN Development System's Response to the Triple Planetary Crisis*, United Nations University, New York, 2021.

recognize more specialized "rights of nature",[5] which engage a stronger, intrinsic value[6] of the natural world – that is, the value that nature has in and of itself, for itself.[7] Thus, intrinsic value suggests that organisms have an "inherent worth" of their own, without recourse to people as the ones ascribing that value.[8] At the same time, environmental protections cannot revert to ideas of "fortress conservation" protecting "pristine wilderness" from humans, often by forced evictions and other human rights violations in the name of conservation. People are part of nature, not separate from it, and so, building on the notion of biocultural rights,[9] society has to ensure that it views nature and people as part of one whole. The triple crisis, and climate change in particular, has therefore caused fundamental changes in the relationship between people and nature, including through how nature is valued and what is perceived to constitute "damage" to the environment.

By contrast, in armed conflicts, the environment often seems to be considered by warring parties only as a secondary concern. Deliberate targeting of infrastructure, energy facilities and industry in military operations releases hazardous substances and toxic chemicals, which harms air, soil, water sources and marine life.[10] The wartime environment is often also viewed as a "tool" to be manipulated and used to a party's advantage, helping to determine where and when to attack in order to aid military operations or to impede those of the enemy. Such wilful environmentally destructive motivations have been demonstrated, for example, in the poisoning of lakes and rivers[11] and in the attack on Ukraine's occupied Kakhovka Dam in June 2023.[12] Warfare also causes several indirect environmental effects through institutional collapse and population displacement. Meanwhile, the commodification of the environment as "property" leads to the unsustainable and often illegal exploitation of "natural resources", frequently playing a role in the financing and sustaining of

5 Craig M. Kauffman and Pamela L. Martin, "Constructing Rights of Nature Norms in the US, Ecuador, and New Zealand", *Global Environmental Politics*, Vol. 18, No. 4, 2018; Roderick Frazier Nash, *The Rights of Nature: A History of Environmental Ethics*, University of Wisconsin Press, Madison, WI, 1989; David R. Boyd, *The Rights of Nature: A Legal Revolution that Could Save the World*, ECW Press, Toronto, 2017.

6 Sometimes also referred to as "inherent" values. See IPBES Values Assessment, above note 1, Chap. 1.

7 *Ibid.*; Michael Bowman, Peter Davies and Catherine Redgwell, *Lyster's International Wildlife Law*, 2nd ed., Cambridge University Press, Cambridge, 2010, Chap. 3; Pieter van Heijnsbergen, *International Legal Protection of Wild Fauna and Flora*, IOS Press, Amsterdam, 1997.

8 Paul W. Taylor, *Respect for Nature: A Theory of Environmental Ethics*, Princeton University Press, Princeton, NJ, 1986.

9 Fabien Girard, Ingrid Hall and Christine Frison (eds), *Biocultural Rights, Indigenous Peoples and Local Communities: Protecting Culture and the Environment*, Routledge, London, 2022.

10 UN Environment Programme (UNEP) and UN Centre for Human Settlements (UNCHS), *The Kosovo Conflict: Consequences For the Environment and Human Settlements*, Nairobi, 1999 (Kosovo Report); UNEP, *Lebanon Post-Conflict Environmental Assessment*, Nairobi, 2007.

11 For example, river contamination by the so-called Islamic State group using crude oil: see Tobias von Lossow, "Water as Weapon: IS on the Euphrates and Tigris: The Systematic Instrumentalisation of Water Entails Conflicting IS Objectives", *SWP Comments*, No. 3, January 2016, p. 2, available at: www.swp-berlin.org/fileadmin/contents/products/comments/2016C03_lsw.pdf (all internet references were accessed in September 2023).

12 Julian Borger, "Devastation from Kakhovka Dam Collapse Could Take Decades to Heal", *The Guardian*, 7 June 2023.

warfare.[13] In many cases the consequence is the destruction of ecosystems, habitat loss and reduced biodiversity.[14]

The triple environmental crisis and the consequent increasing influence of nature's intrinsic value in harmony with humankind are powerful drivers of change that are shaping the future in many areas of international law.[15] This article will explore the implications of these drivers for creating change in the application and interpretation of international humanitarian law (IHL) in order to improve its protective capacity for the environment, as it cannot, and indeed does not, remain completely isolated from the influences of these other legal regimes. War does not exist in a vacuum – and neither do the laws that are created for wartime. Indeed, IHL already evidences a degree of adaptation to newer ways of perceiving the environment. In this vein, two recent initiatives attempting to raise awareness of, clarify and strengthen environmental protection in the context of armed conflict are the International Committee of the Red Cross's (ICRC) *Guidelines on the Protection of the Natural Environment in Armed Conflict* (ICRC Guidelines),[16] published in 2020, and the International Law Commission's (ILC) 2022 Principles on the Protection of the Environment in Relation to Armed Conflicts (PERAC Principles).[17]

A key driver for change in environmental law and human rights law has been an emphasis on the value of nature. This shift has progressed from a perspective that once advocated human exploitation and dominion over the environment to one that recognizes humans as integral to nature, necessitating coexistence in harmonious balance.[18] This article will, therefore, briefly explore the values placed on nature during armed conflict and how those have been changing, and will discuss whether it is possible to reconcile environmental damage caused during armed conflict with nature's intrinsic value, the emerging biocultural rights and "rights of nature". If nature, or indigenous territory, can be viewed as a "victim" of conflict, as the Special Jurisdiction for Peace (Jurisdicción Especial para la Paz, JEP) in Colombia declared in 2019,[19] is it necessary to

13 Daniëlla Dam-de Jong, *International Law and Governance of Natural Resources in Conflict and Post-Conflict Situations*, Cambridge University Press, New York, 2015.

14 Thor Hanson *et al.*, "Warfare in Biodiversity Hotspots", *Conservation Biology*, Vol. 23, No. 3, 2009; Jurgen Brauer, *War and Nature: The Environmental Consequences of War in a Globalized World*, Altamira Press, Plymouth, 2011.

15 Note UNGA Res. 76/300, "The Human Right to a Clean, Healthy and Sustainable Environment", 1 August 2022.

16 ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law, with Commentary*, Geneva, 2020 (ICRC Guidelines).

17 UNGA Res. 77/104, 7 December 2022; ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts*, in *Report of the International Law Commission*, UN Doc. A/77/10, 2022, Chap. V (ILC PERAC Principles), available at: https://legal.un.org/docs/?symbol=A/77/10.

18 IPBES Values Assessment, above note 1; R. F. Nash, above note 5, pp. 50–52; Linda Hajjar Leib, *Human Rights and the Environment: Philosophical, Theoretical and Legal Perspectives*, Martinus Nijhoff, Leiden, 2011, pp. 12–15.

19 The JEP's Chamber for Recognition of Truth declared territories of several indigenous peoples as victims of the conflict in two of its macro cases. See JEP, Caso 02 de 2018, 12 November 2019; JEP, Caso 05 de 2020, 17 January 2020.

re-examine concepts of IHL in order to enhance nature's wartime protection, reparation and restoration? Recent battlefield experience in Ukraine, in the Ukraine–Russia conflict, has also highlighted numerous areas for improvement in the mechanisms for wartime environmental protection.[20]

This contribution analyzes the newly embedded values of nature and the new legal and practical technological tools to explore what can be learned for future conflicts. The first section briefly analyzes the environmental values expressed in IHL, before the article turns to new legal developments from international environmental law and human rights law in the second section. The third and fourth sections focus specifically on the issues of protected areas and post-conflict reparations and restoration, as areas where these new values are most prominently being explored. Finally, the fifth section outlines the exciting contributions to future warfare being made in these two areas in terms of emerging practical and technological tools to supplement the available legal tools.

The values of nature in the laws of armed conflict

The values assigned to people, nature and property are a reflection of how people relate to those entities, and they influence decisions about how the entity is used, managed and protected.[21] These values underpin the approach that is taken in law, and thus, for armed conflict they underpin the limitations on lawful warfare found throughout IHL. This section explores the environmental values reflected in IHL.

Values are most notably expressed in IHL through the principle of humanity found in the Martens Clause.[22] At its inception, the Martens Clause undoubtedly focused on protecting people,[23] but it has since evolved to encompass environmental protections. Commenting on the Martens Clause, Germany, for example, speaks for many States when it recognizes that the "principle of humanity" limb is understood as encompassing the "intrinsic link

20 For example, see the resources on the Conflict and Environment Observatory (CEOBS) website, available at: https://ceobs.org/countries/ukraine/.

21 Iain J. Davidson-Hunt, Helen Suich, Seline S. Meijer and Nathalie Olsen, *People in Nature: Valuing the Diversity of Interrelationships between People and Nature*, International Union for Conservation of Nature (IUCN), Gland, 2016, p. 51; IPBES Values Assessment, above note 1.

22 Hague Convention (II) with Respect to the Laws and Customs of War on Land and Its Annex: Regulations Concerning the Laws and Customs of War on Land, 26 *Martens Nouveau Recueil* (Ser. 2) 949, 29 July 1899 (entered into force 4 September 1900), Preamble; Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I), Art. 1(2); Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978) (AP II), Preamble; Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), Rule 16, available at: https://ihl-databases.icrc.org/en/customary-ihl/rules; ICRC Guidelines, above note 16.

23 In that sense, the principle of humanity was undoubtedly anthropocentric in approach at least up to the 1970s: see Michael N. Schmitt, "Green War: An Assessment of the Environmental Law of International Armed Conflict", *Yale Journal of International Law*, Vol. 22, No. 1, 1997, p. 61.

between the survival of civilians and combatants and the state of the environment in which they live",[24] whereas the "dictates of public conscience" limb refers to the "need to protect the natural environment in and of itself".[25] The German phrasing is echoed in the ICRC's adoption of an "intrinsic approach" in its 2020 Guidelines.[26] The "intrinsic approach" here refers specifically to the latter of Germany's definitions, notably regarding protection of the environment *per se*; that is, "even if damage to it would not necessarily harm humans in a reasonably foreseeable way".[27] Recognition of this "intrinsic approach" rejects the idea that the environment can be a civilian object only when it is used or relied upon by humans or affects humans.[28] The present authors wholly concur with the ICRC's view that IHL affords protection to all of the environment *per se*.

The key question for current purposes, though, is whether IHL also affords protection on the basis of the intrinsic value of the environment (that is, the notion that the environment has value in and of itself, for itself) – a value that is not dependent on any use by people (use would also include aesthetic value such as the beauty of a landscape).[29] There are, thus, two ways in which the notion of "intrinsic" is being used. To avoid confusion, the present authors will continue by referencing intrinsic "value", rather than the ICRC's chosen nomenclature of intrinsic "approach", to make this distinction. Returning to the German view quoted above, that statement also misses the key aspect of environmental intrinsic value (the focus of the present contribution), notably that the environment has value not only in and of itself, but also "for itself". Thus, the environmental values expressed in IHL and through State practice are less clear, less explicitly stated and, thus, arguably narrower than in other areas of international law.

Starting with the aspects of IHL that are more straightforward to classify, several IHL provisions demonstrate a clear anthropocentric approach to environmental protection in wartime by emphasizing the environment as being essential for ensuring the survival of the population. Such anthropocentric approaches emphasize very explicitly and strongly the "human use value" or utilitarian worth of environmental "resources" for the benefit of people. One example of this is the rule prohibiting the destruction of crops and livestock used for civilian sustenance;[30] other rules prohibit attacking or destroying dam walls, for example, if doing so would likely cause flooding and consequent severe civilian casualties,[31] while others prohibit pillage[32] and, during occupation, the

24 ILC, *Comments and Observations Received from Governments, International Organizations and Others*, UN Doc. A/CN.4/749, 17 January 2022, Written Statement of Germany on Draft Principle 12, p. 65.
25 *Ibid.*
26 ICRC Guidelines, above note 16, paras 19–20.
27 *Ibid.*, para. 19.
28 *Ibid.*, para. 19.
29 See IPBES Values Assessment, above note 1, p. 32.
30 For instance, IHL provides special protection for object indispensable to the civilian population: AP I, Art. 54; AP II, Art. 14.
31 AP I, Art. 56; AP II, Art. 15.
32 Hague Convention (IV) Respecting the Laws and Customs of War on Land and Its Annex: Regulations Respecting the Laws and Customs of War on Land, UKTS (1910) 9, 18 October 1907 (entered into force 26 January 1910), Arts 28, 47.

over-exploitation of natural resources that deprives people of sustenance and property.[33] These rules tend, therefore, to reflect stronger instrumental environmental values where the environment is protected on an ancillary basis to the protection that is more geared towards ensuring the health or survival of the population or avoiding massive casualties. Clearly, though, this is not to dispute the fact that the environment benefits from the application of these rules too.

Elsewhere in IHL, however, the picture is perhaps a little more mixed in terms of the environmental values reflected. In the wake of the Vietnam War, as States grappled with the emergence of the global environmental conscience,[34] competing approaches emerged for protecting the environment either with or without involving human impacts.[35] These bifurcated discussions influenced the adoption of two separate landmark provisions in the 1977 Additional Protocol I to the Geneva Conventions (AP I).[36] The gist of both Articles 35(3) and 55 of AP I is the prohibition of "means and methods of warfare which are intended, or may be expected, to cause widespread, long-term, and severe damage to the natural environment".[37] Article 55 reflects a strong instrumental values direction in requiring that such "catastrophic"[38] environmental damage also cause consequential harm to people, with the notable inclusion of the phrase "and thereby to prejudice the health or survival of the population".[39] Article 35(3), on the other hand, makes no reference to human harm and is thus taken to prohibit environmental damage *per se*, otherwise known as "pure environmental damage".[40] As mentioned above, however, arguably the prohibition of "pure environmental damage", in and of itself, does not necessarily equate to environmental protection based on environmental intrinsic value.[41] Of course, it certainly does not preclude it, and Schmitt suggests that the wording does indeed "lean in that direction".[42]

33 *Ibid.*, Art. 55.

34 Arthur H. Westing, *Ecological Consequences of the Second Indochina War*, Almqvist and Wiskell International, Stockholm, 1976; Wil D. Verwey, "Protection of the Environment in Times of Armed Conflict: In Search of a New Legal Perspective", *Leiden Journal of International Law*, Vol. 8, No. 1, 1995.

35 *Official Records of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts*, Vol. 15, CDDH/III/275, 1975, p. 359.

36 *Ibid.* Note the opinion of Mr. Eaton, the UK delegate, in *Official Records of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts*, Vol. 14, CDDH/III/SR.38, 10 April 1975, para. 46; *Report to the Chairman of the Group "Biotope"*, CDDH/III/GT/35, 11 March 1975; M. N. Schmitt, above note 23, p. 70.

37 For an explanation of these concepts, see Michael Bothe, Karl Josef Partsch and Waldemar A. Solf, *New Rules for Victims of Armed Conflicts: Commentary on the Two 1977 Additional Protocols to the Geneva Conventions of 1949*, Martinus Nijhoff, The Hague, 1982, p. 389; and analysis in Karen Hulme, *War Torn Environment: Interpreting the Legal Threshold*, Martinus Nijhoff, Leiden, 2005.

38 M. Bothe, K. J. Partsch and W. A. Solf, above note 37, p. 388.

39 AP I, Art. 55(1).

40 The validity of "pure environmental damage" as a concept is debatable, however, due to the complex interconnectivities of people and ecological processes, such that any ecological harm will to some degree also impact people.

41 See also M. N. Schmitt, above note 23, p. 25.

42 ICRC Guidelines, above note 16, para. 20; M. N. Schmitt, above note 23.

Most controversial for several States is the recognition that Article 35(3) creates an absolute ceiling of environmental damage,[43] notably prohibiting means and methods of warfare likely to breach the threefold threshold of environmental harm. This prohibition continues even when the environment is itself a military objective and even when an attack would remain proportionate[44] to the anticipated military advantage.[45] The inclusion of a ceiling of harm deepens the value placed on the environment, but the trade-off is, of course, the colossal height at which that ceiling has been set.

The foundational rules of distinction,[46] proportionality[47] and precaution[48] have clearly evolved a "greened" dimension since the 1970s with States applying IHL environmental protections more broadly,[49] including recognizing the environment as a *prima facie* civilian object.[50] These provisions have proven invaluable in affording protection to the environment in armed conflict, especially as Articles 35(3) and 55 have yet to live up to expectations, their application dogged as it is by their very high threshold of harm. Yet, there are also concerns that the proportionality rule often offers limited environmental protection even when relatively low-level military advantages are at stake, such as attacks on industrial facilities. In light of this latter concern, it is worth posing the question of whether States are sufficiently considering any environmental values, whether instrumental or intrinsic, in their calculations. All of these developments in the "greening" of the laws, therefore, show that State practice and *opinio juris* have not stood still, with several initiatives over the years seeking to update and clarify IHL in relation to wartime environmental protection. Most recently, reflecting on developments in international law and State practice, the ICRC Guidelines[51] and the PERAC Principles[52] have been especially valuable and comprehensive. The PERAC Principles, in particular, drew extensive State engagement and comments, although they do not specifically elaborate any underpinning environmental values.

The environmental values underpinning IHL therefore remain somewhat elusive. Do the circumstance and horrors of war naturally force nature's intrinsic value to be overridden as other, instrumental values are brought to the fore – for example, its value as property or usability as a weapon or tool of warfare? Or does the environment somehow lose its intrinsic value during armed conflict, and

43 M. N. Schmitt, above note 23, p. 90.
44 For the concept of proportionality, see AP I, Art. 51(5)(b), which prohibits damage to civilian objects that exceeds the anticipated military advantage to be gained from the attack.
45 M. Bothe, K. J. Partsch and W. A. Solf, above note 37; W. D. Verwey, above note 34, p. 11; M. N. Schmitt, above note 23, p. 90.
46 AP I, Art. 48.
47 *Ibid.*, Art. 51(5)(b); ICRC Customary Law Study, above note 22, Rule 14.
48 AP I, Art. 57.
49 Note the State practice evidenced in the commentary to PERAC Principles 13 and 14 (PERAC Principles, above note 17) and underpinning customary IHL Rule 43 (ICRC Customary Law Study, above note 22).
50 Michael Bothe, "The Protection of the Environment in Times of Armed Conflict: Legal Rules, Uncertainty, Deficiencies and Public Developments", *German Yearbook of International Law*, Vol. 34, 1991, p. 55; K. Hulme, above note 37.
51 ICRC Guidelines, above note 16.
52 PERAC Principles, above note 17.

is it even possible to sidestep, suspend or renounce values in wartime that have been recognized in peacetime? Are values akin to a treaty rule that can possibly be suspended at the outbreak of war? This contribution argues that they are not; we maintain that values are constantly evolving and that the law, including IHL, has to reflect modern conceptions of those values. Furthermore, as these values also provide the rationales for the legal rules adopted, they cannot be suspended.[53] Therefore, this contribution argues that the environment's intrinsic value is not currently weighed highly enough during conflict by States, and is being overshadowed by its numerous instrumental values. How does IHL compare, therefore, with other areas of international law that are experiencing a paradigmatic shift in environmental values due to the triple crisis (see the following section)? And how can such developments influence how States or courts approach IHL obligations of environmental protection?

Subsequent sections of this article will return to some of these questions and issues. The following section will first analyze the shifting values landscape in these other areas of law.

The changing values of the environment – theoretically and legally

Biodiversity, nature and the environment more broadly have many "values" in moral, religious, spiritual, cultural and legal terms.[54] In environmental law, States are increasingly going beyond merely appreciating the instrumental (or human-use) values of biodiversity and nature and are recognizing their intrinsic value.[55] The values of nature, or the non-human world, have not only evolved in environmental law, however. Human rights law too has evolved to reflect the increasing vulnerability of the environment, including through the triple environmental crisis.[56] Three areas impacting on this evolution of values will be explored in this section, while subsequent sections will then explore how these values are steadily being reflected in IHL and what that might mean for future warfare.

Values of the non-human world

If human relationships with nature are based only on anthropocentric perspectives of nature's value purely as a commodity or as property, nature's more qualitative

53 Alternatively, continuation of environmental values and approaches can be argued on the basis of the "systemic integration" approach to treaty interpretation, notably interpreting treaty obligations in light of other international law obligations, under the Vienna Convention on the Law of Treaties, 1155 UNTS 331, 23 May 1969 (entered into force 27 January 1980) (VCLT), Art. 31(3)(c). See also ILC, *Final Report of the Study Group on Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, UN Doc. A/CN.4/L.682, 13 April 2006, p. 420.

54 David Harmon, "Intangible Values of Protected Areas: What Are They? Why Do They Matter?", *George Wright Forum*, Vol. 21, No. 2, 2004; Kevin C. Elliott, "Framing Conservation: 'Biodiversity' and the Values Embedded in Scientific Language", *Environmental Conservation*, Vol. 47, No. 4, 2020.

55 Convention on Biological Diversity, 1760 UNTS 69, 5 June 1992 (entered into force 29 December 1993) (CBD), preambular para. 1; UNGA Res. 69/314, "Tackling Illicit Trafficking in Wildlife", 19 August 2015.

56 Anna Grear and Louis J. Kotzé, *Research Handbook on Human Rights and the Environment*, Edward Elgar, Cheltenham, 2015.

values, including its spiritual and cultural values,[57] as well as its intrinsic value, are minimized or eclipsed. This narrow approach to nature is certainly the one that has historically been adopted, as international law, including international environmental law, has been dominated for centuries by an instrumental perspective of nature, and this has undoubtedly caused the triple crisis. Instrumentalism has also caused the sidelining of more spiritual relationships with nature, such as those of indigenous communities who were often displaced from their lands in the process of exploiting natural resources or conserving protected areas. Focusing on nature's anthropocentric uses tends to lead to an undervaluation of its more spiritual and cultural values – values in which nature is not viewed as being so easily replaced or regenerated. Moreover, perspectives of the natural environment as being resilient and regenerative tend to cause an emphasis on its ability to cope with change or damage and have thus held back its protection.

The pendulum has been shifting, though, towards greater prominence of the intrinsic value of nature. It has been forty years since environmental law expressly recognized the intrinsic value of nature, first in the 1979 Bern Convention on the Conservation of European Wildlife and Natural Habitats[58] and, later, in the Convention on Biological Diversity (CBD),[59] both of which ensure protections for habitats and species, among other things, through a protected areas mechanism. But more recent examinations of the values of nature, including by the CBD's own Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), still say that too narrow a set of values is being prioritized.[60] Having catalogued more than fifty methods of valuing nature, IPBES perceives that the biodiversity crisis is "tightly linked" to the ways in which nature has been valued.[61] Emphasizing the need to incorporate diverse perspectives, such as local and indigenous cultural and spiritual knowledge, into actions, IPBES suggests the need to foster more holistic and inclusive approaches to conservation and sustainable use of biodiversity and ecosystems.[62] Intrinsic approaches to nature conservation continue to emphasize the importance of viable habitats for species and limiting harmful human interferences, while now also ensuring the continuity of biocultural rights as a positive measure for both local and indigenous communities and nature itself. These values will, certainly, be particularly pertinent in the next few years as States look to deliver on the Global Biodiversity Framework promise to protect 30% of the planet by 2030.[63]

57 I. J. Davidson-Hunt *et al.*, above note 21, p. 51.
58 Convention on the Conservation of European Wildlife and Natural Habitats, UKTS 56 (1982), 19 September 1979 (entered into force 1 June 1982) (Bern Convention), preambular para. 3.
59 CBD, above note 55, preambular para. 1.
60 IPBES Values Assessment, above note 1, Key Messages 1 and 2. IPBES is an intergovernmental body established by States in 2012 that assesses the state of biodiversity and ecosystem services, provides policy recommendations and enhances the integration of scientific knowledge into decision-making processes. See the IPBES website, available at: www.ipbes.net/about.
61 IPBES Values Assessment, above note 1, Key Message 1.
62 *Ibid.*
63 Kunming-Montreal Global Biodiversity Framework, Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity, CBD/COP/DEC/15/4, 19 December 2022.

The question, therefore, is how intrinsic values could impact the application of IHL rules to enhance environmental protection.

Biocultural rights

In light of the devastating climate change impacts experienced globally in the last few decades,[64] more emphasis within human rights law has been placed on effectively safeguarding the environment. In this context, the recognition of humanity's interdependence with nature has significantly broadened the scope of human rights law with the emergence of efforts to "green" human rights. In addition to recognizing the human right to a healthy environment,[65] the notion of biocultural rights has evolved as a response aimed at correcting or rebalancing humanity's relationship with nature. The IPBES Values Assessment also reflects this biocultural rights[66] perspective, which moves beyond the prior perception of humans as merely exploiting and exerting control over the environment, instead positioning them as integral components of the natural world.[67] This perspective emphasizes the imperative of fostering harmonious coexistence and recognizes the intricate symbiosis between culture, biology and the environment. In doing so, it underscores the mutual enrichment that occurs when human societies recognize and honour the interconnectedness between their cultural heritage, biological diversity and the ecosystems they inhabit.

Emphasis on biocultural rights therefore highlights the stewardship role of indigenous peoples and local communities over their natural environments, and is helping to restructure prevailing concepts regarding property and the legal individual.[68] Such a correction was necessary in environmental law, and largely occurred due to environmental law's increasing symbiosis with human rights.[69] Gone are colonial-era approaches based on the wilderness model of environmental conservation (often called "fortress conservation"), which promoted species preservation through the idea of pristine and untouched nature reserves, achieving this through the forced displacement of indigenous peoples

64 Hoesung Lee and José Romero (eds), *Climate Change 2023: Synthesis Report: Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, Geneva, 2023.

65 UNGA Res. 76/300, above note 15.

66 IPBES Values Assessment, above note 1; Sanjay Kabir Bavikatte, *Stewarding the Earth: Rethinking Property and the Emergence of Biocultural Rights*, Oxford University Press, New Delhi, 2014.

67 Giulia Sajeva, "The Legal Framework behind Biocultural Rights: An Analysis of Their Pros and Cons for Indigenous Peoples and for Local Communities", in Fabien Girard, Ingrid Hall and Christine Frison (eds), *Biocultural Rights, Indigenous Peoples and Local Communities: Protecting Culture and the Environment*, Routledge, London, 2022.

68 S. K. Bavikatte, above note 66.

69 John H. Knox, *Report of the Independent Expert on the Issue of Human Rights Obligations Relating to the Enjoyment of A Safe, Clean, Healthy and Sustainable Environment*, UN Doc. A/HRC/22/43, 24 December 2012. Also see, for example, European Court of Human Rights, *Lopez-Ostra v. Spain*, Appl. No. 16798/90, 9 December 1994; African Commission on Human and People's Rights, *Social and Economic Rights Action Centre and Centre for Economic and Social Rights v. Nigeria*, Communication No. 155/96, 2001, para. 68.

and local communities from their traditional lands.[70] Instead, conservation now seeks to embrace broader cultural, spiritual and social perspectives and values, recognizing that local communities and peoples are a key part of halting biodiversity decline.[71]

How, then, do these broader conservation perspectives relate to the realities of armed conflict, including impacting IHL rules?

Rights of nature

Viewed as more closely reflecting indigenous cosmologies,[72] the growing movement recognizing legal rights for nature is having a profound impact on how nature is valued. The concept is gaining global traction as a framework that recognizes the intrinsic value of the natural world, and is disrupting more traditional, Western-thinking approaches, including notions around the lack of sentience of species.[73] Examples of the recognition of rights of nature can be found in various legal instruments and local initiatives worldwide. Notably, several countries have enshrined the rights of nature in their constitutions, including Ecuador and Bolivia, which have acknowledged Pachamama, meaning "Mother Earth", as a living entity with inherent rights. New Zealand provides legal personhood to Te Urewera National Park and the Whanganui River.[74] In Colombia, significant jurisprudence has granted rights to several parts of nature, including the Amazon.[75] These are just a few of the examples of this spreading phenomenon.

The meaning of these legal initiatives varies. In some cases, they have resulted in transformative changes in environmental governance, such as by creating legal standing or personhood for nature in legal proceedings, or by fostering management structures that involve indigenous communities as guardians or stewards of their ancestral lands.[76] These approaches, overlapping in many cases with the concept of biocultural rights, have empowered indigenous peoples to have a say in decisions affecting their territories, leading to more

70 Lara Domínguez and Colin Luoma, "Decolonising Conservation Policy: How Colonial Land and Conservation Ideologies Persist and Perpetuate Indigenous Injustices at the Expense of the Environment", *Land*, Vol. 9, No. 3, 2020.

71 Cristina Baldauf (ed.), *Participatory Biodiversity Conservation: Concepts, Experiences, and Perspectives*, Springer, Cham, 2020.

72 There remain questions about the roots of the rights of nature concept, namely whether those rights do in fact emanate from indigenous peoples. See Lieselotte Viaene, "Can Rights of Nature Save Us from the Anthropocene Catastrophe? Some Critical Reflections from the Field", *Asian Journal of Law and Society*, Vol. 9, No. 2, 2022.

73 Roger Merino, "Indigenous Knowledge and International (Anthropocentric) Law: The Politics of Thinking from (and for) Another World", in Vincent Chapaux, Frédéric Mégret and Usha Natarajan (eds), *The Routledge Handbook of International Law and Anthropocentrism*, Routledge, London, 2023.

74 See New Zealand, Te Urewera Act, No. 51, 2014; New Zealand, Te Awa Tupua Whanganui River Claims Settlement Act, 2017).

75 Supreme Court of Colombia, STC4360-2018, 5 April 2018.

76 Philipp Wesche, "Rights of Nature in Practice: A Case Study on the Impacts of the Colombian Atrato River Decision", *Journal of Environmental Law*, Vol. 33, No. 3, 2021.

sustainable practices, clean-up plans, and enhanced monitoring of environmental conditions.[77] Thus, the recognition of rights of nature has strengthened the concept of biocultural rights, linking the protection of ecosystems with the cultural identity and well-being of indigenous communities. For instance, the Colombian Constitutional Court made explicit references to biocultural rights in the *Atrato River* case, ensuring the guardianship of indigenous peoples to care for the river.[78] In short, the rights of nature approach asserts that ecosystems, rivers, forests and other natural entities have inherent rights to exist, flourish[79] and evolve, and seeks to protect the intrinsic value of the environment beyond its human-use values.

This growing movement towards recognizing the rights of nature represents a paradigm shift in environmental law and governance, emphasizing the interconnectedness and interdependence of all living beings and their ecosystems. Many of these approaches have therefore started to "challenge the human/nature binaries that privilege and elevate humans over other life forms".[80] This paradigm invites a profound sense of responsibility, compelling an approach that weighs the consequences of human actions on the intricate tapestry of life, ultimately fostering a harmonious and ecologically conscious approach to progress and development where the well-being of ecosystems is integral to human well-being. Rights of nature also challenge the prevailing legal framework that treats nature solely as property or as a resource for human exploitation, and provides nature with a "voice" through legal standing.[81] This voice has been used most effectively as an advocacy tool to oppose environmentally damaging development and extractive projects.[82] Importantly, in legal terms, it means that nature's interests have to be considered in any decision-making process that will impact it.

In the context of armed conflict, can and should these values be omitted? How do these rights affect the protection of nature when applying IHL? Should the recognition of rights of nature also affect how wartime environmental damage is viewed and how it should be compensated?

77 Rosemary J. Coombe and David J. Jefferson, "Posthuman Rights Struggles and Environmentalisms from Below in the Political Ontologies of Ecuador and Colombia", *Journal of Human Rights and the Environment*, Vol. 12, No. 2, 2021.

78 Constitutional Court of Colombia, Sentencia T-622/16, 10 November 2016. For a discussion on the judgment in connection with biocultural rights, see Elizabeth Macpherson, Julia Torres Ventura and Felipe Clavijo Ospina, "Constitutional Law, Ecosystems, and Indigenous Peoples in Colombia: Biocultural Rights and Legal Subjects", *Transnational Environmental Law*, Vol. 9, No. 3, 2020.

79 Lidia Cano Pecharroman, "Rights of Nature: Rivers that Can Stand in Court", *Resources*, Vol. 7, No. 1, 2018, p. 13; Edson Krenak, "Why Indigenous Peoples are Critical to the Rights of Nature", *Human Rights in Context*, 9 August 2022, available at: www.humanrightsincontext.be/post/why-indigenous-peoples-are-critical-to-the-rights-of-nature.

80 Janine Natalya Clark, "Harm, Relationality and More-than-Human Worlds: Developing the Field of Transitional Justice in New Posthumanist Directions", *International Journal of Transitional Justice*, Vol. 17, No. 1, 2023, p. 20.

81 P. Wesche, above note 76.

82 Lieselotte Viaene, Peter Doran and Jonathan Liljeblad, "Transitional Justice and Nature: A Curious Silence", *International Journal of Transitional Justice*, Vol. 17, No. 1, 2023, p. 2.

Enhancing environmental protection during armed conflict

These legal developments recognizing enhanced values of nature and the interconnectedness of all living beings and their ecosystems, together with the triple environmental crisis, require rethinking or refocusing the values of nature across all areas of international law. How is this to be achieved in relation to IHL? First, this contribution is not arguing that the environment's intrinsic value should be the only value taken into consideration. Intrinsic value is but one of many values, including instrumental values; this remains so throughout international environmental law and the new legal developments discussed in the previous section. That being said, the emphasis should be on enhancing considerations of nature by not solely focusing in armed conflict on more immediate instrumental/utilitarian values.

Secondly, there needs to be more open discussion of how States can enhance consideration of the environment's intrinsic value in relation to IHL. Schmitt was heavily critical of the idea of suggesting environmental intrinsic values for IHL in 1995, arguing that "intrinsic valuation leaves us with an incredibly complex process that defies practical application and encourages divisiveness".[83] Even in environmental law where intrinsic value was recognized, Schaffner suggests that those treaties "did little to require any action that takes such values directly into account".[84] However, it is clear that the treaties where intrinsic value was recognized were focused on nature protection, including of threatened species and habitats, and established networks of protected areas where harmful interferences needed to be minimized.[85] The triple crisis demands more urgent action to protect nature, particularly in relation to halting such rapid biodiversity loss, and arguably the legal developments around the rights of nature and biocultural rights suggest practical ways to achieve it. Principally, these approaches ensure that nature is given a voice and a forum to have its rights heard and weighted strongly. Taken together, they offer a viable starting point for developing some practical solutions to implementing nature's intrinsic value through the law.

As noted earlier in this article, the environment has undoubtedly gained recognition during armed conflict as something that needs to be protected. Looking at the practical ways in which intrinsic values have been actioned, arguably one of the main ways in which IHL could respond to nature's intrinsic value and the rights of nature approach is through stronger protections for nature in specific environmentally protected areas, including forests and marine areas. Consequently, this section focuses on the risks and impacts in protected areas during armed conflict and analyzes new legal tools to help safeguard those areas – which is going to be particularly important due to rapid biodiversity decline. Later,

83 M. N. Schmitt, above note 23, p. 98.
84 Joan E. Schaffner, "Value, Wild Animals and Law", in Werner Scholtz (ed.), *Animal Welfare and International Environmental Law*, Edward Elgar, Cheltenham, 2019, p. 23.
85 See, for example, CBD, above note 55, Art. 8; Bern Convention, above note 58, Art. 4.

the article will suggest how to harness new practical and technological tools to further enhance the legal response.

The safeguarding of environmentally protected areas during armed conflict has been a troublesome issue for several decades.[86] While there is some data available, there is still a knowledge gap on exactly how protected areas as a habitat, and their species, are harmed in conflict.[87] Many of the challenges faced are known to stem from the placing of military objectives within protected areas, such as camps/troops, military equipment, weapons stores and communications towers.[88] Beyond this, open environmental spaces are often the theatre for battle itself, with troops building fortifications and camps and launching attacks in such spaces. As evidenced recently in the Ukraine–Russia conflict, major rivers and boggy wetlands terrain are used to create a fortified front line.[89] Forests are often used as cover for armed groups; this occurred in Virunga and Kahuzi-Biega National Parks in the Democratic Republic of the Congo (DRC), bringing the theatre of battle to the protected habitats of endangered gorilla species in these National Parks. Even with low-tech weapons, the presence of the armed groups in the forests, and the proliferation of small arms that their presence created, led to devastating impacts on local endangered species.[90] Similarly, during the protracted conflict in Colombia, armed groups and paramilitaries forced indigenous and local communities off their lands, thus damaging centuries of careful environmental stewardship, in order to exploit oil and mineral resources and to grow illicit crops to sustain the war effort, and ultimately to gain control over the countryside.[91] Forest environments are also regularly used in conflict as a source of shelter, food and firewood for fleeing civilians.

Many ecological spaces are designated as protected areas in peacetime under the rich array of nature conservation treaties, which generally recognize the intrinsic value and "irreplaceable"[92] nature of such spaces, and the

86 Michael Bothe, "War and Environment", in Rudolf Bernhardt (ed.), *Encyclopedia of Public International Law*, Vol. 4, Elsevier, Amsterdam, 2000, p. 1344; W. D. Verwey, above note 34.

87 See IUCN, *Conflict and Conservation*, Nature in a Globalised World Report No. 1, Gland, 2021. Much has been written about the impact of conflict on endangered species in war-torn nature reserves, such as in the DRC: see e.g. Andrew Plumptre, "Lessons Learned From On-the-Ground Conservation in Rwanda and the Democratic Republic of the Congo", in Steven V. Price (ed.), *War and Tropical Forests: Conservation in Areas of Armed Conflict*, Food Products Press, New York, 2003. Other evidence can be found in the invaluable post-conflict studies by UNEP, including those concerning the Iraqi Marshes (Hassan Partow, *The Mesopotamian Marshlands: Demise of an Ecosystem*, Early Warning and Assessment Technical Report, UN Doc. UNEP/DEWA/TR.01-3 Rev. 1, UNEP, Nairobi, 1991) and the impacts of cratering following the Vietnam War (Arthur H. Westing and E. W. Pfeiffer, "The Cratering of Indochina", *Scientific American*, Vol. 226, No. 5, 1972).

88 Note NATO's attack on telecom towers in Serbian protected areas, with cluster bombs, in 1999: UNEP and UNCHS, above note10, pp. 64–66.

89 Júlia Ledur *et al.*, "Follow the 600-Mile Front Line between Ukrainian and Russian Forces", *Washington Post*, 21 February 2023, available at: www.washingtonpost.com/world/interactive/2023/russia-ukraine-front-line-map/.

90 A. Plumptre, above note 87.

91 Alexandra Huneeus and Pablo Rueda Sáiz, "Territory as a Victim of Armed Conflict", *International Journal of Transitional Justice*, Vol. 15, No. 1, 2021, p. 216.

92 Convention on International Trade in Endangered Species of Wild Fauna and Flora, 993 UNTS 2433, March 1973 (entered into force 1 July 1975), preambular para.1; Convention on the Conservation of

"irreparable"[93] nature of their loss. During armed conflict, however, those designations have not fared so well against arguments of military advantage. Some of these environmental law treaty obligations may continue during armed conflict;[94] as they are mostly designed with peacetime in mind, however, many environmental treaty provisions tend to be very flexible in their wording in order to accommodate States' capacities at different levels of development.[95] From an environmental protection perspective, this flexibility can be both a blessing and a curse. Flexibility affords arguments of continuity during armed conflict alongside IHL, but also requires recognition of the wartime context and so arguably allows quite a high degree of weight for military necessity arguments, possibly even leading to a complete eclipse of those obligations of environmental protection.[96] The most promising provision is Article 6 of the Convention for the Protection of the World Cultural and Natural Heritage (World Heritage Convention),[97] which prohibits harm by one State to natural heritage sites in another State. Armed conflict was undoubtedly a situation contemplated at the time of the Convention's adoption,[98] although there is no explicit provision in the treaty relating to wartime prohibitions. Parties have since confirmed, however, that Article 6 applies even during armed conflict, although this confirmation is only found in a non-binding policy document.[99] This example, therefore, demonstrates the need for States Parties to discuss the issue of what happens to their legal obligations under each environmental treaty in times of armed conflict. It also shows the limits of this approach. Thus, continuity of environmental legal obligations during armed conflict is likely to be an insufficient tool in and of itself to rein in or prevent further damage during armed conflicts. On the other hand, the continuity or creation of treaty-based financial and support obligations has been of great practical help to ensure continued attention and focus on nature during armed conflicts.[100] Emulating the support made available for "at-

Migratory Species and of Wild Animals, 19 ILM 15, 23 June 1979 (entered into force 1 November 1983), preambular para.1.

93 Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 2 February 1971 (entered into force 21 December 1975) (Ramsar Convention), preambular para. 3, available at: www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf.

94 Some treaties were also designed with warfare in mind, such as the Revised African Convention on the Conservation of Nature and Natural Resources, 11 July 2016 (entered into force 23 July 2016), available at: https://au.int/en/treaties/african-convention-conservation-nature-and-natural-resources. For a thorough examination of the continuity of environmental treaty obligations in conflicts, see Britta Sjöstedt, *The Role of Multilateral Environmental Agreements: A Reconciliatory Approach to Environmental Protection in Armed Conflict*, Hart, Oxford, 2021.

95 B. Sjöstedt, above note 94.

96 Karen Hulme, "Using International Environmental Law to Enhance Biodiversity and Nature Conservation during Armed Conflict", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022.

97 Convention for the Protection of the World Cultural and Natural Heritage, 11 ILM 1358, 16 November 1972 (entered into force 17 December 1975) (World Heritage Convention).

98 *Ibid.*, Art. 11(4).

99 UNESCO, "Policy for the Integration of A Sustainable Development Perspective into the Processes of the World Heritage Convention", WHC-15/20.GA/INF.13, 2015, para. 31.

100 Britta Sjöstedt, "Contribution of Multilateral Environmental Agreements and Their Institutional Mechanisms to Environmental Peacebuilding", in Daniëlla Dam de-Jong and Britta Sjöstedt, *Research Handbook on International Law and Environmental Peacebuilding*, Edward Elgar, Cheltenham, 2023.

risk" sites during armed conflict in the World Heritage Convention[101] and the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention),[102] for example, more treaty bodies might create similar review and support mechanisms, and as a matter of urgency. It is clearly important, however, for any wartime obligations to be very precise and concrete and agreed by the parties, and for such discussions to include military voices to ensure "buy-in" and practical input and support, especially as regards areas of active hostilities.

All of the legal developments so far have unfortunately come up short. Indeed, the Ukraine–Russia conflict has exposed additional, new problems with current approaches, including how to measure environmental damage in real time and how to collect evidence for potential criminal trials. Furthermore, none of the approaches so far demonstrate the scale of paradigm shift that will be necessary across all areas of international law if there is to be hope of tackling the triple environmental crisis. Returning to the rights of nature discourse, this gives nature, or certain cultural or spiritual elements of nature, a voice in legal proceedings to advocate for its needs and intrinsic value.[103] This recognition creates a concrete method of protection and allows a balancing of nature's interests with other competing values, usually nature's value for exploitation. It also recognizes that certain parts of nature may have an elevated status or value. Stone's original conception of "legal rights for natural objects" referred to a reversal of the burden of proof in relation to harming nature;[104] thus, building on the peacetime conservation rules, the requirements for "due regard" towards the environment during armed conflict,[105] the value of nature and rules on precaution,[106] including the precautionary principle,[107] do these developments, when taken together, arguably create a presumption in favour of protecting certain protected areas in conflict?

A concrete way through which to achieve these goals, and to ensure military input, is contained in the ILC's twin PERAC Principles 4 and 18.[108] Although they still leave room for further clarification, these Principles create a workable approach for "protected environmental zone" agreements.[109] Based on the demilitarized

101 World Heritage Convention, above note 97, Art. 11(4).

102 Ramsar Convention, above note 93. Note the Montreux Record, a listing system for wetlands "facing ecological change" that allows for prioritized conservation attention through onsite inspection, and remedial advice and assistance under the Ramsar Advisory Mission mechanism: see Ramsar Convention, Resolution VI.1, "Working Definitions of Ecological Character, Guidelines for Describing and Maintaining the Ecological Character of Listed Sites, and Guidelines for Operation of the Montreux Record", 1996, and Resolution XIII.10, "Status of Sites in the Ramsar List of Wetlands of International Importance", 2018.

103 Hope M. Babcock, "A Brook with Legal Rights: The Rights of Nature in Court", *Ecology Law Quarterly*, Vol. 43, No. 1, 2016.

104 Christopher D. Stone, "Should Trees Have Standing? Toward Legal Rights for Natural Objects", *Southern California Law Review*, Vol. 45, No. 2, 1972.

105 ICRC Customary Law Study, above note 22, Rule 44.

106 AP I, Arts 57, 58.

107 Declaration on Environment and Development, 31 ILM 874, Rio de Janeiro, 1992, Principle 15.

108 PERAC Principles, above note 17, Principles 14, 18.

109 K. Hulme, above note 96.

zones concept found in Article 60 of AP I, Principle 18 focuses on the designation of protected zones specifically on the basis of environmental importance concerns.[110] While State support for Principle 18 was somewhat mixed, its requirement of a legally binding agreement between the parties to the conflict puts it on an even footing with other provisions for demilitarized zones and helps to ensure implementation. Clearly, with the extensive area-based protection regimes already created in the nature conservation treaties, negotiations for specific Principle 18 agreements would not need to start from scratch – unlike the creation of other demilitarized zones during conflict.

Even if the initial focus is simply on protecting those areas already designated under the numerous environmental protection regimes, however, the first challenge during armed conflict would be to establish exactly what are the boundaries and locations of the protected areas. If Principle 18 agreements are to entail military-free zones, there is still a huge knowledge gap for both sides as to where exactly such areas are located – and not just on enemy territory. Many militaries, or indeed States themselves, would not have a complete map of such areas even in their own territory. Ukraine has certainly discovered this to be the case in the ongoing conflict with Russia: According to NGO estimates, Ukraine contains over fifteen World Heritage Sites, eight UNESCO Biosphere Reserves, over 500 Emerald Network Sites (under the Bern Convention), fifty-two Ramsar Convention wetlands sites and 8,844 sites of protected areas of national and local importance.[111] Altogether, Ukraine's protected areas cover some 80,000 square kilometres.[112] What this also reveals is that making existing protected areas the subject of demilitarized environmental zones in armed conflict would reduce the useable battlefield size considerably. It would also likely draw civilians into those environmental areas that are protected from military activities, while encouraging warfare to move into more urban areas.[113] These are just some of the challenges facing States in designating environmental zones during armed conflict, but they are not insurmountable. Using a multi-agency approach, employing agencies such as the ICRC, the UN Environment Programme (UNEP), the Office of the UN High Commissioner for Refugees, the International Union for Conservation of Nature (IUCN) and environmental treaty bodies, warring parties can work out a balanced zoning agreement.

That process will entail an inevitable narrowing down of the areas that can be protected, taking into account all of their environmental values.[114] Thus, States will need to consider which areas can be prioritized through existing environmental treaty planning obligations, including how best to protect nature, and its intrinsic and spiritual value, in those locations; this will involve ensuring

110 PERAC Principles, above note 17, Principle 18.

111 Olha Krahel, "How the War Has Affected Ukrainian Protected Areas", European Wilderness Society, July 2023, available at: https://wilderness-society.org/how-the-war-has-affected-ukrainian-protected-areas/.

112 *Ibid.*

113 Comment by Carl Bruch, Environmental Peacebuilding Association, in "Workshop on the ILC Draft Principles on the 'Protection of the Environment in Relation to Armed Conflicts' (PERAC): Protected Areas", New York, 26 October 2022 (PERAC Workshop) (on file with author).

114 Comment by Vanessa Murphy, ICRC, in PERAC Workshop, above note 113 (on file with author).

nature corridors, buffer zones and rules to maintain each zone's protection, including that of its personnel.[115] Recognizing the importance of biocultural rights, agreements will also need to protect indigenous territories from the effects of the conflict as far as possible,[116] as recognized in PERAC Principle 5. In creating protected environmental zones in armed conflict, States will therefore need to consider a myriad of legal interests. Many such interests may already have been examined by States in the creation of peace parks, for example, along borders or in shared forests or protected areas.[117] These serve to help secure peace, but also make a good starting point for Principle 18 agreements. Nothing prevents States from negotiating these agreements in advance in this way, or from renewing or amending them if conflict breaks out.

There are already some good examples of successful wartime projects where environmental values have been emphasized rather than specific environmental rules. In Rwanda, for example, working with the armed groups and local population, local rangers believed that the reduced level of violence to the endangered bonobo gorillas in the Rwandan conflict, as opposed to the harm caused in the DRC conflict, was because of the value that the local population had come to see in the gorillas.[118] Similarly, in Colombia, through a careful combination of working with individual farmers and helping with their farming needs, local park rangers were able to convince farmers of the value of the biodiversity within the park so as to reduce the negative impacts of farming while ensuring that the farmers could meet their own needs.[119] In Myanmar, the Karen indigenous peoples have established the Salween Peace Park that protects their traditional lands based on the cultural and spiritual values of those lands.[120] Much of the foundation for fostering stronger intrinsic and cultural values of nature can be built in peacetime, through existing environmental treaty bodies, for example, as well as education programmes and military training. Such community investment in the local environment, in order to develop a feeling of closeness to the natural world, can then be leveraged during armed conflict to encourage continued environmental protection. Drawing from the rights of nature approach, the creation of a voice for nature within militaries, at a sufficiently high level, could also help to ensure that the environment is given standing during conflict, including in designating environmental zones and targeting decision-making.

115 IUCN, above note 87, pp. 51–52.

116 On "conservation violence" and indigenous peoples, see Colin Louma, "Reckoning with Conservation Violence on Indigenous Territories: Possibilities and Limitations of a Transitional Justice Response", *International Journal of Transitional Justice*, Vol. 17, No. 1, 2023.

117 Saleem H. Ali, *Peace Parks Conservation and Conflict Resolution*, MIT Press, Cambridge, MA, 2007; Elaine Hsiao and Philippe Le Billon, "Connecting Peaces: TBCAs and the Integration of International, Social, and Ecological Peace", *International Journal on World Peace*, Vol. 38, No. 1, 2021.

118 A. Plumptre, above note 87, p. 89.

119 Julia Gorricho and Markus Schultze-Kraft, "Wartime Protected Area Governance: The Case of Colombia's Alto Fragua Indiwasi National Park", *Third World Quarterly*, Vol. 42, No. 6, 2021.

120 Fred Pearce, "Amid Tensions in Myanmar, an Indigenous Park of Peace Is Born", *Yale Environment 360*, 2020, available at: https://e360.yale.edu/features/amid-tensions-in-myanmar-an-indigenous-park-of-peace-is-born.

Enhancing post-conflict environmental reparation and restoration

This section explores how wartime environmental damage might be reconciled with nature's intrinsic value and the emerging biocultural rights in post-conflict reparation and restoration. Analyzing, for instance, the work of the ILC and the developments taking place in the Colombian peace process allows a rethinking of how reparation and restoration after armed conflict can better respond to the challenges of wartime environmental damage in the context of the triple planetary crisis.

Reparation involves compensating for losses, restoring property and infrastructure, and acknowledging harm.[121] Reparation also aims to provide post-conflict justice, healing and reconciliation. PERAC Principle 9 reiterates that an internationally wrongful act of a State causing environmental damage would trigger State responsibility and the obligation to make full reparation for the damage to the environment in and of itself.[122] This Principle clearly builds on the ILC's 2001 Draft Articles on Responsibility of States for Internationally Wrongful Acts,[123] widely recognized as customary international law.[124] Reparation encompasses various forms, such as restitution, compensation, satisfaction, rehabilitation and guarantees of non-repetition.[125] However, in relation to most wartime environmental damage, establishing a breach of international law can be a challenging task.[126] This difficulty often arises from the complexity of determining the causal link between an unlawful act and the resulting environmental harm. It may be further exacerbated by limited available information about the pre-conflict state of the environment and the presence of multiple pollution sources.[127]

In the recent International Court of Justice (ICJ) judgment in the *Armed Activities* case of the DRC versus Uganda, reparations in the form of compensation were granted for "significant amount[s] of damage to fauna" in two UNESCO World Heritage Sites, the Okapi Wildlife Reserve and Virunga National Park in the DRC.[128] This ruling was based on the finding that Uganda had violated its IHL obligations as the Occupying Power.[129] In this context of armed conflict, the Court reaffirmed its stance that "it is consistent with the

121 Nina Jorgensen, "A Reappraisal of Punitive Damages in International Law", *British Year Book of International Law*, Vol. 68, No 1, 1998.

122 PERAC Principles, above note 17.

123 ILC, *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, in *Report of the International Law Commission*, UN Doc. A/56/10, Supp. 10, Chap. IV.E.1, November 2001 (ILC Draft Articles).

124 ICRC Customary Law Study, above note 22, Rule 150.

125 ILC Draft Articles, above note 123, Art. 34.

126 In the agreement between Eritrea and Ethiopia, the environmental claims of Ethiopia were permitted but dismissed because of lack of evidence of harm. See Sean D. Murphy, Won Kidane and Thomas R. Snider, *Litigating War: Arbitration of Civil Injury by Eritrea–Ethiopia Claims Commission*, Oxford University Press, Oxford, 2013.

127 Lingjie Kong and Yuqing Zhao, "Remedying the Environmental Impacts of War: Challenges and Perspectives for Full Reparation", *International Review of the Red Cross*, Vol. 92, No. 879, 2023, p. 14.

128 ICJ, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Reparations, Judgment, 9 February 2022, paras 351–363.

129 *Ibid.*

principles of international law governing the consequences of internationally wrongful acts, including the principle of full reparation, to hold that compensation is due for damage caused to the environment, in and of itself".[130] The reference to environmental damage is mirrored in PERAC Principle 9(1). In the *Armed Activities* case, despite the lack of sufficient evidence to determine the extent of the material damage, the Court did not exclude the possibility of compensation. Instead, it awarded compensation in the form of "a global sum for all damage to natural resources".[131]

Environmental harm, in this context, is often assessed based on economic damage to property or the destruction of the environment's utilitarian or aesthetic aspects.[132] This approach to environmental damage, however, undoubtedly presents challenges, particularly when it comes to encompassing elements such as air and water, which do not fit neatly into the traditional property paradigm. Additionally, determining ownership rights over environmental resources can be complex and contentious. Furthermore, this perspective underscores the anthropocentric nature of property designations, where ownership and rights are predominantly granted to humans, often overlooking the intrinsic value and rights of other, non-human entities.[133] Yet, there are some examples where reparations in the context of armed conflict have included environmental damage that goes beyond the notion of property. The most notable example is drawn from the practice of the UN Compensation Commission (UNCC),[134] set up following the 1990–91 Gulf War. Uniquely, the UNCC granted reparations for damage, including pure environmental damage, on the singular basis of Iraq's breach of Article 2(4) of the UN Charter in invading Kuwait.[135] This basis for setting up a compensation mechanism has not been repeated since, although there are frequent calls for the creation of a free-standing wartime environmental compensation mechanism. In relation to the UNCC, focusing on the breach of Article 2(4) meant that all losses which flowed from the illegal invasion could be compensated regardless of the lawfulness of individual actions under IHL.[136] Consequently, Security Council Resolution 687 (1991) was interpreted to allow claims for various losses or expenses, including, importantly, to pay for scientific assessments of the environmental damage, for measures to prevent or to clean up and restore the environment, for the purposes of evaluating and abating the harm and restoring the environment, and for depletion of or damage to natural resources.[137] While this resolution seemingly established a mechanism for claims

130 *Ibid.*, para. 348.
131 *Ibid.*, para. 363.
132 L. Kong and Y. Zhao, above note 127, pp. 16–19.
133 *Ibid.*
134 The UNCC was established by the Security Council as a temporary institution to review and grant claims for which Iraq was liable in accordance with UNSC Res. 687, 3 April 1991.
135 For more detailed analysis, see Cymie Payne and Peter Sands, *Gulf War Reparation and the UN Compensation Commission*, Oxford University Press, Oxford, 2011.
136 *Ibid.*
137 UNCC, *Report and Recommendations made by the Panel of Commissioners Concerning the First Installments of F4 Claims*, UN Doc. S/AC.26/2001/16, 22 June 2001. See also UNSC Res. 687, 8 April 1991.

primarily focused on valuing the environment in monetary terms as a commodity, the UNCC process was revolutionary in its scope in regard to the environment. Notably and importantly, it did open up the possibility for compensation for pure environmental damage by including claims for ecological losses.[138] Iraq, indeed, disputed that there was a legal obligation to compensate losses that were not financially measurable, but this argument was dismissed by the UNCC, which successfully granted compensation for monitoring, assessing, cleaning up and restoring damaged soil, water and ecosystems as well as claims for environmental damage caused by the transit of refugees.[139]

However, certain environmental damage occurring in armed conflict is not unlawful under international law and is therefore not afforded reparation. For instance, significant environmental damage occurring as lawful collateral damage proportionate to a clear military purpose falls outside the scope. Thus, under specific IHL rules, it may not be unlawful to cause significant oil spills, pollution of rivers, burning of forests, toxic leaks and other types of pollution. Such assessments are typically made on a case-by-case basis. Furthermore, these types of cases are rarely subject to legal proceedings, leading to the fact that many of these acts are unassessed and unprosecuted – thus, the environment is often viewed as the "silent victim of conflict".[140] Additionally, the absence of functioning governmental institutions in conflict zones often gives rise to cascading negative environmental consequences which, while detrimental, may not necessarily amount to unlawful actions under international law. Excessive exploitation of natural resources may, in certain circumstances, be considered as pillage, but when conducted by governmental forces in their own State, it usually falls outside the scope of liability regimes. In light of the triple planetary crisis, to the extent that acts resulting in significant environmental damage may be committed in conformity with IHL rules, it is suggested that the rules should be informed by the recent developments of emerging biocultural rights and rights of nature. Such an approach, for example, is necessitated by the systemic integration approach to treaty interpretation.[141] Timely clean-up to restore polluted areas, rebuild governmental institutions and infrastructures, and ensure drinking water, clean air and other ecosystem services will only become more imperative with the triple crisis – including in situations where the source of environmental damage cannot be identified, or reparation is not available. In those situations, PERAC

138 Cymie Payne, "Developments in the Law of Environmental Reparations – A Case Study of the UN Compensation Commission", in Carsten Stahn, Jens Iverson and Jennifer S. Easterday (eds), *Environmental Protection and Transitions from Conflict to Peace*, Oxford University Press, Oxford, 2017.

139 *Ibid.*

140 Rosemary Rayfuse, "Rethinking International Law and the Protection of the Environment", in Rosemary Rayfuse (ed.), *War and the Environment: New Approaches to Protecting the Environment in Relation to Armed Conflict*, Brill, Leiden, 2014, p. 1; see also, for instance, "Secretary-General's Message for the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict", 6 November 2014, available at: www.un.org/sg/en/content/sg/statement/2014-11-06/secretary-generals-message-international-day-preventing-exploitation.

141 See VCLT), above note 53, Art 31(3)(c.

Principle 25 encourages States to take remedial measures, which may involve voluntary compensation.[142] Rather than solely focusing on attributing State responsibility, the Principle emphasizes the importance of finding means to tackle environmental damage. Voluntary contributions may play an important role in addressing the gap, therefore, between the law applicable in armed conflict and the values assigned to the environment in peacetime.

As stated earlier, reparation aims to provide justice, healing and reconciliation. However, reparation often does not account for the injustices to local and indigenous communities related to the environment that are common in armed conflicts and in the aftermath of armed conflicts, such as displacement, land grabbing or the implementation of infrastructure, extraction or agriculture development projects without consulting the local communities who may have been forced to flee or are otherwise no longer able to decide. For instance, many corporations have taken advantage of the armed conflict in Colombia by purchasing land at low prices for exploitation without any liability.[143] Violence in the name of conservation is also common in armed conflicts and their aftermath; thus, recognizing the value of nature, reparation efforts should encompass harms caused by acts occurring more broadly in the context of armed conflicts that affect environments and communities.[144]

In this regard, the JEP, which was established as the judicial mechanism as part of the peace process in Colombia, has taken some novel steps to address environmental damage in relation to the armed conflict. In a series of landmark resolutions, the JEP has declared that several indigenous territories are considered as "victims" of the armed conflict.[145] Territory is not to be considered simply in the sense of Western notions of property or land law, but as encapsulating the environment, humans and non-humans, including the spiritual, and their interaction. The recognition of these specific territories as victims means that they will have legal rights, including access to justice, truth and reparations.[146] It is not yet clear what being a victim will mean for the territories in terms of reparation, however, as this will only be resolved later in the JEP process. Still, the declaration is in line with the shifted paradigm of going beyond the instrumental value of the environment as an object in need of restoration to a subject that has suffered harm and possesses its own reparative rights.[147]

142 PERAC Principles, above note 17, Principle 25.

143 Isabella Ariza-Buitrago and Luisa Gómez-Betancur, "Nature in Focus: The Invisibility and Re-emergence of Rivers, Land and Animals in Colombia's Transitional Justice System", *International Journal of Transitional Justice*, Vol. 17, No. 1, 2023.

144 C. Louma, above note 116.

145 JEP, Resolution SRVT – 079, 12 November 2019; JEP, Resolution SRVR – Caso 005-002, 17 January 2020; JEP, Resolution SRVBIT – 094, 10 June 2020; JEP, Resolution SRVBIT – 018, 24 January 2020.

146 A. Huneeus and P. Rueda Sáiz, above note 91.

147 Britta Sjöstedt, "Legal Advancements in Environmental Peacebuilding: Exploring the Jurisprudence of the Special Jurisdiction for Peace in Colombia and Its Declaration of the Environment as a Victim", *Ecology and Society*, forthcoming.

The question of establishing reparation mechanisms for victims of armed conflict has been part of a lengthy debate.[148] There still seems to be a question of whether individuals can claim reparations under IHL,[149] and so the JEP's expansion of the concept of victims complicates the debate even further by blurring the distinction between the harm suffered by individuals and groups and the harm suffered by the territories themselves.[150]

To address environment-related injustices to communities, it is suggested that long-term reforms aimed at reconciling ecological imbalances and promoting the rights and interests of marginalized communities should be carried out. "Ecological reconciliation" is a concept that promotes the restoration and healing of ecosystems, particularly in landscapes that have been degraded or disrupted by human activities.[151] It emphasizes the need to reconcile human development with ecological integrity and biodiversity conservation, and involves restoring ecological processes, reconnecting fragmented habitats and reintroducing native species to create functioning ecosystems that can support diverse flora and fauna.[152] This concept recognizes the importance of acknowledging and rectifying the historical impacts of human actions on the environment. Such efforts can then address the "slow environmental violence" inflicted on the environment, which is often overlooked, and the deeply impactful ways in which environmental degradation and resource exploitation contribute to the suffering and vulnerability of communities affected by conflict.[153] Unlike the immediate effects of armed conflicts, slow environmental violence operates over a longer time frame, gradually eroding the natural resource base and ecosystem services that communities rely on for their livelihoods and well-being.[154] These types of damage are often not discussed in current debates within international legal scholarship on wartime environmental damage, as pointed out by Cusato.[155]

The approach taken by the JEP may have significant implications for expanding the definition of environmental harm within the context of post-conflict reparation and restoration. Even if no individuals suffer or there is no clear economic damage, the territory itself may still experience ecological harm, which could include harm resulting from economic and structural factors associated with armed conflict, such as large-scale mining projects, infrastructure

148 Christian Marxsen, "Introduction: The Emergence of an Individual Right to Reparation for Victims of Armed Conflict", in Cristián Correa, Shuichi Furuya and Clara Sandoval, *Reparation for Victims of Armed Conflict*, Max Planck Trialogues, Cambridge University Press, Cambridge, 2020.

149 *Ibid.*

150 A. Huneeus and P. Rueda Sáiz, above note 91.

151 Eleanor Shoreman-Ouimet and Helen Kopnina, "Reconciling Ecological and Social Justice to Promote Biodiversity Conservation", *Biological Conservation*, Vol. 184, April 2015; Esme G. Murdock, "Unsettling Reconciliation: Decolonial Methods for Transforming Social-Ecological Systems", *Environmental Values*, Vol. 27, No. 5, 2018; E. Hsiao and P. Le Billon, above note 117.

152 *Ibid.*

153 Eliana Cusato, *The Ecology of War and Peace Marginalising Slow and Structural Violence in International Law*, Cambridge University Press, Cambridge, 2021.

154 *Ibid.*; Rob Nixon, *Slow Violence and the Environmentalism of the Poor*, Harvard University Press, Cambridge, MA, 2011.

155 E. Cusato, above note 153.

development, commercial mono-crop farming within these territories without consulting the indigenous populations that are often displaced, sometimes by force, and even the loss of the human communities caring for the territories.[156] Consequently, harm inflicted to the indigenous territories (for instance, those known as Katsa Su and Cxhab Wala Kile) can encompass a broader range of consequences beyond direct damage caused by armed conflict, including the disruption of the balance between communities and their environment.[157] The JEP's declaration of victimhood implies that the harm inflicted on these communities needs to be addressed simultaneously with the harm inflicted on their environment, including its unique culture and spiritual life. This approach would also involve communities as representatives of their territories and would thus align with international laws relating to access rights and public participation.[158] Importantly in this respect, PERAC Principle 5 emphasizes that remedial measures need to be taken in consultation with indigenous peoples.[159] The CBD also includes an obligation for States to support local populations in developing and implementing remedial action in degraded areas where biological diversity has been reduced.[160] These legal frameworks do not, however, include any reference that indigenous and local communities are obligated to speak for nature. Yet, by including them in the decision-making processes to address environmental harm and injustices caused in relation to the broader landscape of armed conflict, other types of acts could be addressed which go beyond the harms that are unlawful under IHL. This approach may then also recognize the spiritual and cultural values associated with the environment, considering humans as part of nature rather than in dominion over it, in line with biocultural rights.[161]

New practical and technological tools?

Future warfare is likely to engage more and more on the digital and technological level. The scale of change witnessed in the Ukraine–Russia conflict in relation to the use of drones alone is staggering. The era of smart weapons undoubtedly brought advantages to the battlefield, including greater precision in targeting, which benefited both civilians and the environment.[162] As Schmitt recognized, the advent of smart weapons made targeting more accurate and so helped lower

156 A. Huneeus and P. Rueda Sáiz, above note 91.
157 I. Ariza-Buitrago and L. Gómez-Betancur, above note 143.
158 Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, 2161 UNTS 447, 25 June 1998 (entered into force 30 October 2001); Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, 3397 UNTS CN195, 4 March 2018 (entered into force 22 April 2021); UN Declaration on the Rights of Indigenous Peoples, UNGA Res. 61/295, 2 October 2007.
159 PERAC Principles, above note 17, Principle 9.
160 CBD, above note 55, Art. 10(d).
161 A. Huneeus and P. Rueda Sáiz, above note 91.
162 Maja Zehfuss, "Targeting: Precision and the Production of Ethics", *European Journal of International Relations*, Vol. 17, No. 3, 2011.

the acceptable level of environmental harm, through, for example, application of the proportionality rule.[163] The same is true for the myriad new technological tools available. Thus, while there are new challenges from the triple planetary crisis, this section will explore how these new technological tools can be valuable additions to the legal toolbox for protecting the environment in armed conflict.

There have been many valuable lessons learned from the Ukraine–Russia conflict. Ukraine actively wanted to both monitor wartime environmental damage and prosecute harms, yet almost immediately it became clear that there was no "off-the-shelf" toolkit available for monitoring, analyzing and recording wartime environmental damage in real time. Most previous environmental assessments had been undertaken post-conflict.[164] Technology, however, was available to help fill some of those gaps and can help to make legal advances both in terms of protecting environmental zones during armed conflict and delivering post-conflict reparations and restoration.

New technological innovations in environmental monitoring, such as the growth of citizen science, open-source data, artificial intelligence, drones, remote sensing and satellite imaging, can revolutionize the monitoring and restoration of nature. Citizen science initiatives, in particular, help engage local communities and individuals in scientific data collection and monitoring – and help both to foster and channel intrinsic value in nature within the local community.[165] By involving local populations, citizen science can provide valuable information on environmental conditions, pollution levels and biodiversity in conflict zones, in real time. As smartphones are widely accessible, they can serve as powerful tools for environmental monitoring and reporting in conflict zones, with mobile applications enabling real-time data collection on pollution incidents, ecosystem changes and resource extraction.[166] With robust evidential systems in place, they can also facilitate the reporting of environmental violations, providing valuable information to legal authorities.[167] Additionally, communication technologies such as social media platforms and messaging apps allow for the rapid dissemination of information, raising awareness about environmental issues and promoting public engagement and safety. Used responsibly, this data can support legal responses for alleged violations of IHL rules, such as disproportionate environmental damage, unlawful destruction and breaches of the "widespread, long-term and severe" threshold, by providing evidence of environmental damage, facilitating accountability and informing decision-making processes.[168]

163 M. N. Schmitt, above note 23, pp. 57–58.

164 See, for instance, Ken Conca and Jennifer Wallace, "Environment and Peacebuilding in War-Torn Societies: Lessons from the UN Environment Programme's Experience with Postconflict Assessment", *Global Governance*, Vol. 15, No. 4, 2009.

165 Henry Sauermann *et al.*, "Citizen Science and Sustainability Transitions", *Research Policy*, Vol. 49, No. 5, 2020.

166 *Ibid.*, p. 3.

167 Harvard Law School, Emmett Environmental Law and Policy Clinic, *A Manual for Citizen Scientists Starting or Participating in Data Collection and Environmental Monitoring Projects*, 2019, available at: https://citizenscienceguide.com/homepage.

168 *Ibid.*

The availability of open-source data, including satellite imagery, remote sensing data and geospatial information, enables a more comprehensive understanding of environmental changes in conflict-affected areas.[169] Open-source data can therefore assist in identifying and monitoring environmental hotspots, tracking deforestation and forest fires, assessing water contamination and detecting illegal activities. Legal responses can carefully utilize this data to strengthen claims, support investigations and hold perpetrators accountable for environmental harm.[170] Remote sensing technologies, including aerial and satellite imagery, can offer high-resolution data on deforestation, land-use changes and other environmental indicators.[171] Similarly, drones equipped with cameras and sensors can be used for aerial monitoring of conflict areas, including environmentally protected areas. They can capture real-time images and videos, providing valuable visual evidence of environmental destruction, illegal resource extraction or pollution incidents.[172] In the Ukraine–Russia conflict these have been most valuable in monitoring environmental impacts away from the contact zone, as due to the increased battlefield use of drones as both weapons and intelligence-gathering tools, they are more likely to be seen as hostile and so targeted when in the contact zone. That being said, integrating drone and remote sensing data into legal processes can certainly enhance evidence collection, facilitate environmental assessments and support legal actions.

The combined effects of these various technologies can play a vital role in mapping and measuring environmental harms during armed conflict. Mapping of environmental damage will also clearly help the defending party to attend to incidents in real time, and so reduce the long-term environmental threat. Harnessing these technological tools, though, requires collaboration among various stakeholders, including legal experts, scientists, local communities and technology developers. Efforts should focus on capacity-building, ensuring data accuracy and reliability, and establishing mechanisms for integrating technology-derived evidence into legal frameworks effectively in conflict-affected regions. By leveraging new technological innovations in environmental monitoring, legal responses in conflict can be strengthened with improved evidence-gathering, enhanced transparency and increased public participation. With increased understanding of the scale of environmental damage caused in conflict, including in real time, new technologies may also affect how people value the environment. All of these factors would then feed into the ways in which the international community can grapple with the triple planetary crisis.

169 Dorijan Radočaj, Jasmina Obhođaš, Mladen Jurišić and Mateo Gašparović, "Global Open Data Remote Sensing Satellite Missions for Land Monitoring and Conservation: A Review", *Land*, Vol. 9, No. 11, 2020.

170 Evizal Abdul Kadir *et al.*, "Wildfire Hotspots Forecasting and Mapping for Environmental Monitoring Based on the Long Short-Term Memory Networks Deep Learning Algorithm", *Environments*, Vol. 10, No. 7, 2023.

171 Marcin Frackiewicz, "Remote Sensing Techniques for Mapping Forests and Biodiversity", TS2 Space, 21 March 2023, available at: https://ts2.space/en/remote-sensing-techniques-for-mapping-forests-and-biodiversity/.

172 Jesús Jiménez López and Margarita Mulero-Pázmány, "Drones for Conservation in Protected Areas: Present and Future", *Drones*, Vol. 3, No. 1, 2019.

Conclusions

The triple planetary crisis is a key driver of change that is quickly and radically shaping legal and policy landscapes, and warfare should be no exception. This article has therefore examined the evolving values attributed to nature due to the triple crisis and the implications for the legal protection of the environment in relation to armed conflict. It has explored the intersection of IHL, international environmental law, human rights, and indigenous laws to propose new legal approaches for protecting and repairing environmentally and culturally important spaces during and after armed conflict. Recent developments, such as the IPBES Values Assessment, the concept of biocultural rights and the acknowledgment of granting rights to nature, emphasize the intrinsic value of the environment and endorse the understanding of the interconnectedness between humans and non-human entities. Those connections and values need to be more heavily weighted against nature's instrumental values during armed conflict.

By analyzing the changing values and legal developments in this area, this contribution has shown how biocultural and intrinsic values can be integrated into interpretations of IHL obligations in order to enhance soldiers' and other stakeholders' environmental awareness on the battlefield and afterwards. Going further, peacetime nature conservation treaties show how protecting nature for its intrinsic value can be implemented in practical ways, most notably through protecting habitats and minimizing harmful interferences. Thus, conservation through protected area regimes is key. Due to the new target of conserving 30% of the planet by 2030, in the CBD's Global Biodiversity Framework, the number and scale of designated protected areas in peacetime is likely to increase sharply in the next few years. Thus, finding a workable mechanism for continuing valuable conservation work during armed conflict is imperative. PERAC Principle 18 offers an invaluable way forward, but there needs to be more guidance on how it could work in practice. That work is now out of the ILC's hands, and more discussion is thus required to move it forward. This article has offered some suggestions for how such agreements might be created and designed.

Legal developments in the UNCC, the ICJ and the JEP have shown that reparation and restoration in post-conflict situations can take into account less traditional views on environmental damage going beyond the immediate and tangible consequences (for humans) on the environment. In particular, the JEP's declaration of victim status for territories connects structural violence with exploitation of natural resources, land-grabbing and other environmental harm in the context of armed conflict that then leads to long-term injustices and suffering for local communities. Thus, these legal advancements underscore the evolving understanding of the complex interplay between environmental damage, armed conflict, and long-term suffering within affected communities, emphasizing the need for a more holistic approach to reparation and restoration in post-conflict contexts with a view of biocultural and intrinsic values of nature.

Bolstering and complementing these legal tools, the increasing significance of new technological tools must also be recognized. Drones, citizen science and remote sensing technologies, for example, are proving to be invaluable aids for both monitoring and evaluating environmental damage, including in environmentally protected areas. With increased evidence of the scale and types of wartime environmental damage obtained through these new technologies, the value of the environment may also be enhanced. Furthermore, these technologies can help to catalogue evidence in cases and build engagement that can carry through to peacetime, thus leading to more effective enforcement of environmental laws. As a result, these actions may then also influence the development, implementation and adaptation of environmental laws to better protect the environment and address emerging challenges.

Addressing the triple planetary crisis in armed conflict is already vital for conflict prevention and sustainable peacebuilding. The triple crisis has brought greater attention to these urgent environmental issues and their interconnectedness. It has highlighted the need for more robust and coordinated international efforts, including the development of more coherent, protective legal interpretations and applications, and stronger enforcement of the law, to address the challenges in a more effective way.

International Review of the Red Cross (2023), **105** (924), 1267–1292.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000516

IRRC_

Protecting the environment in armed conflict: Evaluating the US perspective

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Abstract

This article outlines and evaluates the US perspective on how treaty and customary international law protect the natural environment during international armed conflict. It surveys the relevant treaties to which the United States is a party and examines US views on their pertinent provisions. It then assesses claims that the environmental obligations residing in the 1977 Additional Protocol I to the 1949 Geneva Conventions have attained customary status, outlines the United States' rejection of those claims, and evaluates the reasonableness thereof. Finally, it highlights ambiguities in certain US environmental positions, the resolution of which would bring much-needed clarity to the law.

Keywords: international humanitarian law, protection of the environment, armed conflict.

* The thoughts and opinions expressed in this article are those of the authors and not necessarily those of the US government, the US Departments of the Navy or Army, or the US Naval War College.

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On 30 November 1961, in coordination with the government of South Vietnam, President Kennedy authorized US armed forces to prepare for the use of defoliants to support military operations against Viet Cong and North Vietnamese forces.[1] In the decade that followed, the US Air Force sprayed approximately 20 million gallons of the herbicide Agent Orange over the forests and fields of Vietnam, Cambodia and Laos.[2] In total, Operation Ranch Hand destroyed more than five million acres of forest and half a million acres of crops in an effort to deny the enemy sanctuary.[3] Additionally, tractors equipped with ploughs levelled nearly three quarters of a million acres of vegetation.[4]

The environmental devastation of the Vietnam War, which the United States maintains violated no international legal prohibitions,[5] ignited a global campaign to minimize the impact of armed conflict on the natural environment. Although international humanitarian law (IHL) has long provided general rules that result in indirect protection for the environment, this effort sought to establish *special* protections within that body of law through a progression of international instruments,[6] the relevant provisions of which some observers claim have crystallized into customary international law.[7]

Despite consistent involvement in armed conflicts in the decades that followed, the United States has largely distanced itself from this effort. Specifically, it has declined to embrace many of the purported rules or interpretations the movement has generated, thereby injecting doubt that they enjoy customary status today. US pronouncements on the subject have done little to clarify its views, further frustrating attempts to build international consensus on the state of the law.

1 William A. Buckingham Jr, *Operation Ranch Hand: The Air Force and Herbicides in Southeast Asia, 1961–1971*, Office of the Air Force History, United States Air Force, Washington, DC, 1982, p. 21.

2 Andrew Glass, "U.S. Launches Spraying of Agent Orange, Jan. 18, 1962", *Politico*, 18 January 2019, available at: www.politico.com/story/2019/01/18/us-launches-operation-ranch-hand-jan-18-1962-1102346 (all internet references were accessed in October 2023).

3 *Ibid.*

4 Michael N. Schmitt, "Green War: An Assessment of the Environmental Law of International Armed Conflict", *Yale Journal of International Law*, Vol. 22, 1997, p. 10.

5 See US District Court for the Eastern District of New York, *Vietnam Association for Victims of Agent Orange v. Dow Chemical Co. (in re Agent Orange Product Liability Litigation)*, MDL No. 381, 04-CV-400, Statement of Interest of the United States, 12 January 2005, pp. 4–13.

6 By "special", we refer to instruments or provisions that pertain to the natural environment itself as the protected entity, regardless of whether parts thereof constitute civilian objects, in contrast to those general protections that focus on, for example, protected persons or objects. With respect to the latter, protections may be direct, contingent upon the environmental component in question qualifying as a civilian object, or merely incidental.

7 See e.g. International Law Commission (ILC), *Principles on the Protection of the Environment in Armed Conflict*, 2022 (PERAC Principles), Principle 13. See also the earlier draft of the PERAC Principles: ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries*, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2022 (ILC Draft Principles). Note that the commentary to Principle 13(2) indicates that the phrase "subject to applicable international law" is meant to "recognize[] that there are still different views regarding the customary status of both the duty of care and the prohibition as enshrined in Additional Protocol I". See also Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), Rule 45, as well as the associated practice collected by the ICRC at: https://ihl-databases.icrc.org/en/customary-ihl/v2.

This article outlines and evaluates the US perspective on how treaty and customary law protect the natural environment during international armed conflict. We begin by surveying the relevant treaties to which the United States is a party and examining its views on their pertinent provisions. Attention then turns to claims that certain environmental obligations, such as those special protections residing in the 1977 Additional Protocol I to the 1949 Geneva Conventions (AP I), have attained customary status. Our discussion outlines the United States' rejection of such claims and assesses the reasonableness thereof against international law's standards for the crystallization of customary international law. Finally, the article concludes by highlighting ambiguities in certain US environmental positions, the resolution of which, we believe, would bring much-needed clarity to the law. Against that framework, we note that environmental protections other than those which limit the conduct of parties to an international armed conflict,[8] including obligations under international and domestic environmental law, are beyond the scope of the article.

Before turning to the law, we must emphasize that our purpose is not to advocate for the adoption of more progressive legal interpretations by the United States – although, speaking in our personal capacities, we believe doing so would be beneficial. Instead, our objective is to succinctly map and objectively assess the applicable US positions. By increasing transparency, we hope to contribute to greater clarity as to how IHL protects the environment.

Environmental protections and US treaty obligations

The United States is party to several treaties that provide varying degrees of specific, general or incidental protections to the natural environment. Three of these treaties warrant examination in our analysis.[9]

The Hague and Geneva Conventions

Article 23(g) of the Regulations Annexed to the 1907 Hague Convention (IV) Respecting the Laws and Customs of War on Land (Hague Regulations) provides a foundational safeguard for the environment by forbidding parties "to destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war".[10] The rule, violation of which is a war crime

8 The fact that our analysis is limited to the environmental obligations pertaining to international armed conflicts does not imply that we believe certain protections addressed herein would not apply to non-international armed conflicts, which are simply beyond the scope of this article.

9 For a summary of other relevant treaties not addressed by this article, see, for example, Michael N. Schmitt, "Humanitarian Law and the Environment", *Denver Journal of International Law and Policy*, Vol. 28, No. 3, 2000.

10 Regulations Concerning the Laws and Customs of War on Land, Annexed to Convention (IV) Respecting the Laws and Customs of War on Land, 36 Stat. 2227, TS No. 539, 18 October 1907 (entered into force 26 January 1910), Art. 23(g).

under the Rome Statute of the International Criminal Court,[11] embodies the long-standing customary prohibition against wanton destruction expressed in earlier instruments such as the 1874 Brussels Declaration and, with particular relevance to US interpretation, the 1863 Lieber Code.[12] And as noted by the International Court of Justice (ICJ), the Hague Regulations reflect customary international law.[13]

A similar restriction, albeit of more limited applicability, is found in Article 53 of the 1949 Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War (GC IV), which provides:

> Any destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social or cooperative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military operations.[14]

In contrast to Article 23(g) of the Hague Regulations and its Rome Statute corollary, only "extensive" destruction in violation of Article 53 is a grave breach of GC IV and a war crime under the Rome Statute.[15] Further limiting its scope is the fact that, unlike the Hague Regulations, its protections are limited to the context of occupation.[16] Like the Hague Regulations, the Geneva Conventions are generally considered to reflect customary international law.[17]

As applied to the environment, these provisions beg the question of what is encompassed by the notion of "property". Neither treaty defines the term. This omission has minimal practical significance in the course of many military operations, but it is of pronounced concern in the environmental context. For their part, Article 53 of GC IV and the International Committee of the Red Cross's (ICRC) corresponding 1958 Commentary clarify that the term includes

11 Rome Statute of the International Criminal Court, UN Doc. A/CONF.183/9, 17 July 1998 (entered into force 1 July 2002) (Rome Statute), Art. 8(2)(b)(xiii).

12 Project of an International Declaration Concerning the Laws and Customs of War, Brussels, 27 August 1874 (Brussels Declaration), Art. 13(g); Francis Lieber, *Instructions for the Government of Armies of the United States in the Field*, General Order No. 100, US Department of War, 24 April 1863 (Lieber Code), Art. 44. Both instruments were non-binding as a matter of *international* law. See also US Department of Defense (DoD), *Law of War Manual*, Office of the General Counsel, July 2023 (US Law of War Manual), sec. 2.3.1 and accompanying footnotes; Program on Humanitarian Policy and Conflict Research at Harvard University, *Manual on International Law Applicable to Air and Missile Warfare*, 2009, Rule 88.

13 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996* (Nuclear Weapons Advisory Opinion), paras 79–82, citing *Trial of the Major War Criminals, 14 November 1945–1 October 1946*, Vol. 1, Nuremberg, 1947, p. 254, and *Report of the Secretary-General Pursuant to Paragraph 2 of Security Council Resolution 808 (1993)*, UN Doc. S/25704, 3 May 1993, introducing the Statute of the International Criminal Tribunal for the former Yugoslavia (ICTY), unanimously approved by the UN Security Council in UNSC Res. 827, 25 May 1993.

14 Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War of 12 August 1949, 75 UNTS 287 (entered into force 21 October 1950) (GC IV), Art. 53.

15 *Ibid.*, Art. 147; Rome Statute, above note 11, Art. 8(2)(a)(iv). For an examination of how the ICTY has interpreted "extensive" in this context, see ICTY, *The Prosecutor v. Tihomir Blaškić*, Case No. IT-95-14-T, Judgment (Trial Chamber), 3 March 2000, para. 157.

16 Jean Pictet (ed.), *Commentary on the Geneva Conventions of 12 August 1949*, Vol. 4: *Geneva Convention relative to the Protection of Civilian Persons in Time of War*, ICRC, Geneva, 1958 (ICRC Commentary on GC IV), pp. 301, 601.

17 Nuclear Weapons Advisory Opinion, above note 13, paras 79–82.

"real or personal" property, regardless of whether it is owned by private persons or the State or other public authorities.[18] Neither clarifies, however, whether it includes aspects of the environment that are not traditionally associated with legal notions of real property, such as a State's national waters (territorial, archipelagic and internal) or airspace. From a textual standpoint, the extent to which these provisions protect *all* environmental components is, therefore, somewhat uncertain.

Subsequent interpretation of these provisions by the United States suggests that it believes their reach is substantial. For instance, it has asserted that

> the entirety of the natural environment would receive protection against wanton destruction or against destruction as an end in itself. Similarly, it seems clear that in certain cases, parts of the natural environment may be regarded as "enemy property" (i.e., natural property) that may not be seized or destroyed unless imperatively demanded by the necessities of war.[19]

Under this expansive restatement, the prohibition against wanton destruction protects the whole environment, including national waters and airspace. Such a broad interpretation is consistent with the categorical pronouncement in the US Army and Marine Corps' *Commander's Handbook on the Law of Land Warfare* that "[w]anton destruction of the environment is prohibited".[20] Still, it is unclear why the United States distinguishes between "the entirety" of the environment in the first sentence and only "parts" of the natural environment as constituting the enemy's natural property in the second. Indeed, both refer to the same rule, that prohibiting wanton destruction.

Regarding the first sentence, it may be that the United States considers there to be a customary prohibition that applies with greater breadth than its treaty corollaries, one that addresses wanton destruction wherever it occurs, including in the commons (high seas, international airspace, outer space, the

18 GC IV, Art. 53; ICRC Commentary on GC IV, above note 16, p. 301. For the ICRC's most recent position on the matter, see ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law, with Commentary*, Geneva, 2020 (ICRC Guidelines), paras 175–179. See also US Law of War Manual, above note 12, sec. 5.17.1 ("All property located in enemy territory is regarded as enemy property regardless of its ownership"); Yoram Dinstein and Arne Willy Dahl (eds), *Oslo Manual on Select Topics of the Law of Armed Conflict: Rules and Commentary*, Springer, Cham, 2020 (Oslo Manual), commentary accompanying Rule 97, para. 4 ("The notion of property is not defined by applicable treaties. The notion of property must therefore be understood in light of its ordinary (dictionary) meaning. All tangible, movable or immovable items as well as real property fall within the notion of 'property'").

19 *Protection of the Environment in Relation to Armed Conflicts: Comments and Observations Received From Governments, International Organizations and Others*, UN Doc. A/CN.4/749, 17 January 2022 (State Comments to ILC Draft Principles), p. 77; see also John B. Bellinger III and William J. Haynes Jr, "A US Government Response to the International Committee of the Red Cross Study *Customary International Humanitarian Law*", *International Review of the Red Cross*, Vol. 89, No. 866, 2007, p. 455 (stating that "parts of the natural environment may not be destroyed unless required by military necessity").

20 US Department of the Army, *The Commander's Handbook on the Law of Land Warfare*, FM 6-27/MCTP 11-10C, August 2019 (US Land Handbook), para. 2-135.

moon and celestial bodies).[21] If so, such an interpretation would correspond to our view. The second sentence, although encompassing all components, may be intended to reflect the fact that the two treaty provisions are, by their terms, limited to the enemy's territory ("property", Hague Regulations, Article 23(g)) or to occupied territory (GC IV, Article 53).[22]

While we leave it to the United States to explain this expression of *opinio juris*, review of US practice-in-fact confirms that the United States interprets the notion of property broadly. A notable and persuasive example is the US response to Iraq's actions at the end of the First Gulf War. Prior to the Iraqi military's final withdrawal from Kuwait, its forces dumped between 7 and 9 million barrels of oil into the Persian Gulf and damaged or set fire to nearly 600 oil wells. The acts affected Kuwait's land, territorial waters and national airspace (as well as international waters and airspace). In a report to the US Congress following the war, the Department of Defense (DoD) contended that "Iraq's wanton acts of destruction" violated IHL, citing both Article 23(g) of Hague Regulations and GC IV's Articles 53 and 147 (on grave breaches).[23] Although Iraq was not a party to Hague Convention IV, the United States maintained that Article 23(g) reflects customary international law and that "its obligations are binding upon all nations".[24]

Moreover, the report further implied that the release of oil into the Persian Gulf wantonly destroyed *enemy property*:

> Review of Iraqi actions makes it clear the oil well destruction had no military purpose, but was simply punitive destruction at its worst. … As with the release of oil into the Persian Gulf, this aspect of Iraq's wanton destruction of Kuwaiti property had little effect on Coalition offensive combat operations.[25]

The fact that the United States included Kuwait's territorial seas within the contemplated scope of "property" demonstrates that there are few, if any, features of the environment that would evade the articles' proscriptions.

In sum, although a more fulsome exploration of the nuances of what constitutes property in the context of wanton destruction is beyond this article's scope, there is little

21 The Oslo Manual notes that due regard for the environment should be given when planning military operations, explaining that the rule extends to belligerent States; neutral States; international sea areas; and outer space, the Moon and other celestial bodies. Oslo Manual, above note 18, Rules 138–139. It further notes that the question of whether the environment encompasses outer space, the Moon and celestial bodies for IHL purposes is "controversial". *Ibid.*, commentary accompanying Rule 139, para. 3.

22 Accord FM 6-27, above note 20, para. 2-135 ("Wanton destruction of the environment is prohibited"); UNGA Res. 47/37, "Protection of the Environment in Times of Armed Conflict", 9 February 1993 ("Stressing that destruction of the environment, not justified by military necessity and carried out wantonly, is clearly contrary to existing international law").

23 DoD, *Conduct of the Persian Gulf War: Final Report to Congress*, Appendix O: "The Role of the Law of War", April 1992 (Final Report to Congress), p. 624. See also *ibid.*, p. 621; *Remarks by the United States of America before the Sixth Committee*, UN Doc. A/C.6/46/SR.18, 22 October 1991, para. 37.

24 Final Report to Congress, above note 23, p. 606. See also "Letter From the Permanent Missions of the Hashemite Kingdom of Jordan and of the United States of America Addressed to the Chairman of the Sixth Committee", UN Doc. A/C.6/47/3, 28 September 1992 (Letter from US and Jordan), p. 2.

25 Final Report to Congress, above note 23, p. 625.

doubt that the United States interprets Articles 23(g) and 53 as extending to all environmental components within an applicable State's territorial reach.

The ENMOD Convention

In contrast to the Hague Regulations and GC IV, which extend protection to the environment through generally applicable rules, the 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD Convention) prohibits parties from converting the environment into a weapon. Its operative provision, Article 1, forbids "engag[ing] in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party", or assisting, encouraging or inducing others to do the same.[26] As this text indicates, the prohibition has several elements. There is general agreement between the United States and other States as to their interpretation, subject to one minor divergence discussed below.

First, the Convention only prohibits "military or any other hostile use" of environmental modification techniques as a "means of destruction, damage or injury to any other State Party".[27] It does not prohibit engaging in environmental modification for peaceful purposes, such as mitigating droughts, even if such actions might cause harm to neighbouring States. As noted in the DoD's *Law of War Manual*, the prohibition "reflects the idea that the environment itself should not be used as an instrument of war".[28]

Next, the effects must be "widespread, long-lasting or severe". Use of the disjunctive "or" establishes a low bar; satisfying any of the three conditions suffices to meet the standard. In line with a report prepared by the ENMOD Convention's drafting committee, the United States interprets the threshold for these effects, at least as used in the Convention, as "encompassing an area on the scale of several hundred square kilometers" (widespread), "lasting for a period of months, or approximately a season" (long-term), and "involving serious or significant disruption or harm to human life, natural and economic resources, or other assets" (severe).[29] As will be seen, AP I uses the same standards but requires their cumulative satisfaction.

Finally, the conduct in question must constitute an "environmental modification technique". As the Convention clarifies, this "refers to any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the earth, including its biota, lithosphere,

26 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, 1108 UNTS 151, 18 May 1977 (entered into force 5 October 1978) (ENMOD Convention), Art. 1.

27 *Ibid.*, Art. 1(1).

28 US Law of War Manual, above note 12, sec. 6.10.3.

29 *Ibid.*, sec. 6.10.2; see also State Comments to ILC Draft Principles, above note 19, p. 104. A variation of the phrase also appears in Articles 35 and 55 of AP I: Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I), Arts 35(3), 55(1).

hydrosphere and atmosphere, or of outer space".[30] In their committee report, the drafters agreed that causing "earthquakes; tsunamis; an upset in the ecological balance of a region; changes in weather patterns (clouds, precipitation, cyclones of various types and tornadic storms); changes in climate patterns; changes in ocean currents; changes in the state of the ozone layer; and changes in the state of the ionosphere" qualified as environmental modification techniques.[31]

The report further provides, however, that these illustrative phenomena "would result, or could reasonably be expected to result, in" threshold effects.[32] Use of the word "would" suggests that causation of the phenomena for military reasons, without more, "would be prohibited".[33] In other words, resort to the phenomena would necessarily reach the requisite threshold.

The US explanation, on the other hand, is more nuanced. It recognizes that "earthquakes, tsunamis, and cyclones are environmental effects *likely to be* widespread, long-lasting, or severe that *could be* caused by the use of environmental modification techniques".[34] The prohibition would therefore only apply in circumstances in which causation of the enumerated phenomenon would reach the requisite severity. For the United States, causation of a minor earthquake to disrupt enemy operations in a relatively remote area, for example, would likely not breach the obligation.

Additional Protocol I

The United States is a prominent *non*-party to the first treaty to apply so-called "special protection" to the environment during armed conflict. While it is bound by the 1949 Geneva Conventions, the United States has not ratified AP I, which deals with international armed conflict. In addition to several articles that generally or incidentally protect the environment – such as, insofar as it applies to qualifying parts of the environment, the prohibition on attacking civilian objects[35] – the Protocol also contains three novel protections that specifically apply to the environment.[36]

- Article 35(3): "It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment."

30 ENMOD Convention, above note 26, Art. 2. A well-known example of such a technique is the US cloud seeding programme employed in Vietnam to disrupt enemy supply lines and other operations: see M. N. Schmitt, above note 9, pp. 268–269, 278.

31 *Report of the Conference of the Committee on Disarmament*, Vol. 1: *Understanding Relating to Article II*, UN Doc. A/31/27, 1976, p. 92.

32 *Ibid.*

33 *Ibid.*; see M. N. Schmitt, above note 9, p. 279.

34 US Law of War Manual, above note 12, sec. 6.10.2 (emphasis added).

35 AP I, Art. 52. Or consider Article 54(2), according to which aspects of the environment would receive enhanced protection as "objects indispensable to the survival of the civilian population": *ibid.*, Art. 54 (2). Relevant components of the environment qualifying as such would include "agricultural areas for the production of foodstuffs, crops, [and] livestock", and bodies of water required for drinking water and irrigation.

36 *Ibid.*, Arts 35, 55.

- Article 55(1): "Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population."
- Article 55(2): "Attacks against the natural environment by way of reprisals are prohibited."

As the United States is not party to the instrument, these safeguards do not bind it.[37] Yet, some observers claim that Articles 35(3) and 55(1) reflect contemporary customary international law binding the United States and other non-parties.[38] This begs the question of the US view regarding customary IHL protection of the environment.

Environmental protections under customary international law

In its 2005 study on *Customary International Humanitarian Law* (ICRC Customary Law Study), the ICRC identified three rules pertaining to the environment that it asserts are customary in character. The foundational rule is Rule 43, "Application of General Principles on the Conduct of Hostilities to the Natural Environment".

> The general principles on the conduct of hostilities apply to the natural environment:
>
> A. No part of the natural environment may be attacked, unless it is a military objective.
> B. Destruction of any part of the natural environment is prohibited, unless required by imperative military necessity.
> C. Launching an attack against a military objective which may be expected to cause incidental damage to the environment which would be excessive in relation to the concrete and direct military advantage anticipated is prohibited.[39]

37 United States, "Statement on Ratification of the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, Accepting Protocols I & II", 1861 UNTS 482, 24 March 1995, p. 483 ("The United States considers that the fourth paragraph of the preamble to the Convention, which refers to the substance of provisions of article 35 (3) and article 55 (1) of additional Protocol I to the Geneva Conventions for the Protection of War Victims of August 12, 1949, applies only to States which have accepted those provisions").

38 See ICRC Customary Law Study, above note 7, Rule 45; ILC Draft Principles, above note 7, Draft Principle 13. See also Waldemar A. Solf, "Protection of Civilians against the Effects of Hostilities under Customary International Law and under Protocol I", *American University International Law Review*, Vol. 1, No. 1, 1986, p. 134.

39 ICRC Customary Law Study, above note 7, Rule 43.

In great part, albeit not entirely, Rule 43 is consistent with US views on the customary law protection of the environment. The United States agrees that, in general, parts of the environment are protected by the customary law prohibition on attacking civilian objects (paragraph A), that wanton destruction of the environment not justified by imperative military necessity is prohibited (paragraph B), and that any attacks against military objectives must consider damage to those parts of the environment constituting civilian objects during their proportionality analyses (paragraph C).[40] From the US perspective, however, beyond those parameters, Rule 43 is overbroad to the extent that it applies to *all* parts of the environment.[41]

The ICRC's categorical approach is grounded in the definitions of "civilian object" and "military objective" found in Article 52 of AP I. According to paragraph 1 of that provision, "[c]ivilian objects are all objects which are not military objectives".[42] Paragraph 2 defines military objectives as "objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military of advantage".[43]

A plain text reading of these provisions suggests that the characterization of objects is binary: an object is either a military objective or a civilian object. In line with this interpretation, the ICRC's *Guidelines on the Protection of the Natural Environment in Armed Conflict* (ICRC Guidelines) observe that "all parts or elements of the natural environment are civilian objects, unless some become military objectives",[44] a position that the ICRC likewise included in its commentary to Rule 43.[45]

The ICRC asserts that this categorical, dualistic approach is "generally recognized today", a claim supported by the International Law Commission (ILC) in its 2022 Principles on Protection of the Environment in Relation to Armed Conflicts (PERAC Principles).[46] PERAC Principle 13 states: "No part of the

40 On wanton destruction, see text accompanying above notes 19–25. On proportionality, see US Law of War Manual, above note 12, sec. 5.12; Letter from US and Jordan, above note 24, p. 3.

41 To the extent that paragraphs A and C apply, their treaty equivalents are Articles 52 (attacking civilian objects, military objectives) and 57 (proportionality) of AP I.

42 AP I, Art. 52(1). This is a definitional approach that the United States generally supports: US Law of War Manual, above note 12, secs 5.6.1.1, 5.6.3.

43 AP I, Art. 52(2). The United States likewise generally supports this definition, although it interprets it in ways that do not always mirror those of other States. US Law of War Manual, above note 12, sec. 5.6.3; Michael J. Matheson, "Remarks on the United States Position on the Relation of Customary International Law to the 1977 Protocols Additional to the 1949 Geneva Conventions at the Sixth Annual American Red Cross–Washington School of Law Conference on International Humanitarian Law, 22 January 1987", *American University Journal of International Law and Policy*, Vol. 2, 1987, p. 436. The most prominent example of a US interpretation of the rule that diverges from the mainstream is the treatment of so-called "war-sustaining" objects as military objectives. U.S. Law of War Manual, above note 12, sec. 5.6.8.5; and see, generally, Ryan Goodman, "The Obama Administration and Targeting 'War-Sustaining' Objects in Noninternational Armed Conflict", *American Journal of International Law*, Vol. 110, No. 4, October 2016.

44 ICRC Guidelines, above note 18, para. 18.

45 ICRC Customary Law Study, above note 7, pp. 143–144.

46 ICRC Guidelines, above note 18, paras 18, 95; PERAC Principles, above note 7, Principle 13.

environment may be attacked, unless it has become a military objective."[47] The ILC's commentary on the earlier draft of the PERAC Principles explains that the norm "underlines the inherently civilian nature of the environment".[48] By this approach, the environment is protected as such due to its intrinsic value, without regard to whether "damage to it would not necessarily harm humans in a reasonably foreseeable way for the purposes of international humanitarian law assessments".[49]

Although the United States generally supports AP I's definitional approaches to civilian objects and military objectives,[50] it follows an alternative interpretation according to which the natural environment only "receives the protection afforded civilian objects *insofar as it constitutes a civilian object*".[51] The key distinction is that the United States disagrees with the ICRC that if the target of an attack or other military operation is not a military objective, it *must* be, by definition, a civilian object:

> [T]he fact that the natural environment is not considered as intrinsically military in nature, does not necessarily mean that every element thereof should be treated as a civilian object under the law of armed conflict. Furthermore, … the natural environment should not be viewed in the abstract, but rather as a collection of elements, some of which are civilian in nature and protected as such.[52]

In support of its position, the United States has pointed out that States do not treat the *entire* environment as protected during combat operations:

> [P]arts of the natural environment not constituting military objectives are routinely adversely affected by lawful attacks against military objectives. This type of environmental damage (e.g., small craters in the earth formed from the use of artillery) is generally not considered as part of the implementation of the principle of proportionality.[53]

By the US approach, environmental features that are reasonably characterized as civilian objects, such as natural resources, would be protected from direct attack, thereby benefiting from such conduct-of-hostility rules as proportionality and precautions in attack.[54] However, those rules would not protect parts of the

47 PERAC Principles, above note 7, Principle 13(3).
48 ILC Draft Principles, above note 7, commentary accompanying Principle 13, para. 10; see also commentary accompanying Principle 14, para. 3.
49 ICRC Guidelines, above note 18, para. 19.
50 US Law of War Manual, above note 12, secs 5.6.1.1, 5.6.3.
51 State Comments to ILC Draft Principles, above note 19, p. 79 (emphasis added).
52 *Ibid.*, p. 82.
53 *Ibid.*, p. 79; see also J. B. Bellinger III and W. J. Haynes Jr, above note 19, p. 455 (noting that only "parts of the natural environment cannot be made the object of attack unless they constitute military objectives, as traditionally defined").
54 See DoD, *Report to Senate and House Appropriations Committees on International Policies and Procedures Regarding the Protection of Natural and Cultural Resources during Times of War*, 19 January 1993, reprinted as Appendix VIII in Patrick J. Boylan, *Review of the Convention for the Protection of Cultural Property in the Event of Armed Conflict*, UNESCO, 1993, p. 202.

environment that bear little or no nexus to the civilian population and therefore would not be considered objects at all.[55] In other words, the United States articulates what has been labelled the anthropocentric approach to the environment, zeroing in on its relationship to the civilian population and civilian activities.[56]

The next duty that the ICRC characterizes as customary in its Customary Law Study is set forth in Rule 44, "Due Regard for the Natural Environment in Military Operations". This rule provides, in part, that

> [m]ethods and means of warfare must be employed with due regard to the protection and preservation of the natural environment. In the conduct of military operations, all feasible precautions must be taken to avoid, and in any event to minimize, incidental damage to the environment.[57]

The Study's commentary explains that this obligation "stems not only from the application … of the rules protecting civilian objects, but also from a recognition of the need to provide particular protection to the environment as such".[58] Textually, the United States views the rule as reflecting customary law insofar as it applies to environmental features qualifying as civilian objects.[59] However, it disagrees with aspects of the ICRC's commentary to the rule.

With respect to the "due regard" standard in the first sentence, the ICRC Customary Law Study's commentary and the ICRC Guidelines, which reiterate the same duty,[60] refer to a general recognition that the environment should be provided distinct protection, particularly when employing means and methods of warfare.[61] Interestingly, the Guidelines assert that this due regard obligation is "operationalized" in, for example, the requirements to take "constant care" and feasible precautions to spare and minimize incidental damage to civilian objects,[62] an unambiguous reference to Article 57 of AP I.

As just noted, however, the United States does not view all parts of the environment as *per se* protected by IHL's customary conduct-of-hostility rules

55 Israel follows a similar "anthropocentric" approach: "[A]n element of the natural environment constitutes a civilian object only when it is used or relied upon by civilians for their health or survival. It follows that there are elements of the natural environment which will constitute neither civilian objects (where such elements are not used by civilians or relied upon by them for their health or survival) nor military objectives (where such elements do not qualify as such under the law of armed conflict)." State Comments to ILC Draft Principles, above note 19, p. 17; see also ICRC Guidelines, above note 18, para. 19.

56 See, generally, M. N. Schmitt, above note 4, p. 6.

57 ICRC Customary Law Study, above note 7, Rule 44.

58 *Ibid*., commentary accompanying Rule 44, p. 147.

59 See US Navy, US Marine Corps and US Coast Guard, *The Commander's Handbook on the Law of Naval Operations*, NWP 1-14M/MCWP 5-12/COMDTPUB P5800.7A, March 2022 (US Naval Handbook), sec. 8.4; Chairman of the Joint Chiefs of Staff, *Joint Targeting*, Joint Publication 3-60, 31 January 2013, Appendix A, para. 8(b).

60 ICRC Guidelines, above note 18, Rule 1.

61 ICRC Customary Law Study, above note 7, p. 147; ICRC Guidelines, above note 18, commentary accompanying Rule 1, para. 42. The ICRC's contention is contested, however: see e.g. Oslo Manual, above note 18, commentary accompanying Rule 138, para. 3.

62 ICRC Guidelines, above note 18, para. 44.

concerning civilian objects. Nor has it recognized the constant care obligation outlined in Article 57(1) of AP I as customary.[63] Instead, the United States has long considered the "principle that all practicable precautions, taking into account military and humanitarian considerations, be taken in the conduct of military operations to minimize incidental death, injury, and damage to civilians and civilian objects" to be customary in character.[64] In other words, it concurs with Rule 44's feasible precautions requirement only to the extent that it applies to *civilian objects*.

A third environment-specific rule in the ICRC Customary Law Study is Rule 45, "Causing Serious Damage to the Natural Environment", which states: "The use of methods or means of warfare that are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment is prohibited. Destruction of the natural environment may not be used as a weapon."

The first half of this rule is plainly based on Articles 35 and 55 of AP I,[65] except for the latter's ban on reprisals. US objections to Article 55's prohibition on reprisals against the environment (or, for that matter, most other civilian objects) may partly explain the absence of any reference to reprisal.[66] As to the final sentence, the United States is of the view that the use of means and methods of warfare affecting the environment is "prohibited only if their use is clearly excessive in relation to the concrete and direct overall military advantage anticipated".[67] More to the point, the United States has long rejected characterization of Articles 35(3) or 55, or parts thereof, as customary.[68]

63 There is disagreement over whether the constant care requirement establishes a duty of care beyond the obligations to take feasible precautions in attack. See Michael N. Schmitt and Michael Shauss, "Uncertainty in the Law of Targeting: Towards a Cognitive Framework", *Harvard National Security Journal*, Vol. 10, 2019, pp. 178–181.

64 M. J. Matheson, above note 43, pp. 426–427; see also FM 6-27, above note 20, para. 2-137 ("Routine conventional military operations involving the employment of air, ground, and naval forces that may cause damage to the environment are not activities prohibited by [the law of armed conflict]").

65 AP I, Arts 35(3), 55(1)–(2); see also Yoram Dinstein, *The Conduct of Hostilities under the Law of International Armed Conflict*, 4th ed., Cambridge University Press, Cambridge, 2022, para. 816 ("Neither provision of AP/I offers a definition of the phrase 'natural environment'. The ICRC Commentary suggests that it 'should be understood in the widest sense to cover the biological environment in which a population is living' – i.e. the fauna and flora – as well as 'climatic elements'"). Yves Sandoz, Christophe Swinarski and Bruno Zimmermann (eds), *Commentary on the Additional Protocols*, ICRC Geneva, 1987 (ICRC Commentary on the APs), para. 2126.

66 See e.g. Mark Simonoff, "Remarks at the 70th UN General Assembly Sixth Committee on Agenda Item 83: Report of the International Law Commission on the Work of its 67th Session, 11 November 2015", in Office of the Legal Advisor, US Department of State, *Digest of United States Practice in International Law*, 2015, p. 287 ("Relatedly, we are troubled by the presence among the principles of rules extracted from certain treaties that we do not believe reflect customary law. For example, draft principle II-4 repeats a prohibition in Additional Protocol I … on attacks against the natural environment by way of reprisals that we do not believe exists as a matter of customary international law. To the extent the rule is offered to encourage normative development, we remain in disagreement with it, consistent with the objections we have stated on other occasions").

67 US Law of War Manual, above note 12, sec. 6.10.3.1; FM 6-27, above note 20, para. 2-143.

68 M. J. Matheson, above note 43, p. 424; see also Oslo Manual, above note 18, commentary accompanying Rule 139, para. 4; Program on Humanitarian Policy and Conflict Research at Harvard University, *Commentary on the HPCR Manual on International Law Applicable to Air and Missile Warfare*, 2010 (AMW Manual Commentary), commentary accompanying Section M, para. 5.

Before the United States signed AP I in 1977, the Joint Chiefs of Staff concluded that its environmental provisions were "not expected to have any significant military impact and [were] consistent with overall US security interests".[69] Although acknowledging the provisions' novelty, the Joint Chiefs pointed to the fact that the United States had already discontinued using Agent Orange, the only means or method of warfare that Article 35 could have arguably prohibited – a view they reiterated five years later when providing additional recommendations in support of deliberations on US ratification.[70]

Concerns arose later during the Reagan administration. In a 1985 review, the Joint Chiefs began to express hesitancy regarding the two articles, albeit in a narrow set of circumstances:

> It is not clear what type of weapons or methods of warfare would be prohibited by paragraph 3, Article 35. … This Article could have considerable impact on naval warfare. Attacks against oil tankers and ships carrying hazardous chemical cargoes might be expected to have long-term, widespread, and severe effects on the sea environment.[71]

Even then, however, the articles were deemed "militarily acceptable", subject to certain conditions.[72]

The fact that the United States military was generally comfortable with the two articles at the time should not be construed as signalling that it understood them to reflect customary international law. After all, AP I both codified existing law, such as the principle of distinction, and progressively developed IHL. Indeed, it was widely understood that the environmental provisions incorporated into the Protocol were novel within IHL. Nor should the Joint Chiefs' recommendations be misunderstood to imply that, to the extent that the United States has observed environmental limitations on its means and methods of warfare (e.g., by discontinuing use of Agent Orange), it has done so out of a sense of legal obligation. As will be explained, absent that condition, customary international law does not form from practice alone.

69 Herbert J. Hansell, "Circular 175: Request for Authorization to Sign Two Protocols to the Geneva Conventions of 1949 for the Protection of Victims of War", Memorandum to the Secretary of State, 11 October 1977, Tab E, p. I-35-4. The Joint Chiefs incorporated these comments by reference into their advice respecting Article 55: *ibid.*, p. I-55-2.

70 *Ibid.*, p. I-35-4; James E. Dalton, "JCS Review of the 1977 Protocols Additional to the 1949 Geneva Conventions", Memorandum to the Secretary of Defense, 1 October 1982, Appendix A (citing no relevant proposed understandings or reservations with respect to Articles 35 or 55).

71 John W. Vessey Jr, "Review of the 1977 First Additional Protocol to the Geneva Conventions of 1949", Memorandum to the Secretary of Defense, 3 May 1985, Appendix, pp. 24–25. The review recommended reserving the words "or may be expected" from Article 35 "[i]n light of the uncertainty surrounding the meaning of paragraph 3", which "would eliminate the problem of collateral ecological damage from conventional weapons and methods of warfare, including herbicides and riot control agents, and would limit the obligations imposed to essentially those already established by the ENMOD Convention". *Ibid.*, Appendix, p. 25.

72 *Ibid.*, Appendix, p. 57; see also *ibid.*, Appendix, p. 25.

In any event, by 1987, the Executive Branch decided not to pursue ratification of AP I, characterizing it as "fundamentally and irreconcilably flawed."[73] Deputy State Department legal adviser Michael Matheson laid out specific objections at an American University event that year.[74] Concerning special protection for the environment, he labelled Articles 35 and 55 "too broad and ambiguous" and stated that they were "not part of customary international law".[75]

Faced with such opposition, the ICRC Customary Law Study acknowledges the US position by stating that it appears the United States is a "persistent objector".[76] But as that status does not preclude crystallization of the customary rule, it is unsurprising that the United States pushed back aggressively on Rule 45 once the Study was published. In a joint letter, DoD general counsel William Haynes and Department of State legal adviser John Bellinger used the environmental provisions to illustrate numerous objections to the study's approach and conclusions, which the United States continues to maintain today:

> [T]he Study fails to demonstrate that Rule 45, as stated, constitutes customary international law in international or non-international armed conflicts …. First, the Study fails to assess accurately the practice of specially affected States, which clearly have expressed their view that any obligations akin to those contained in Rule 45 flow from treaty commitments, not from customary international law. …
>
> … The Study recognizes that the practice of specially affected States should weigh more heavily when assessing the density of State practice, but fails to assess that practice carefully. France and the United States repeatedly have declared that Articles 35(3) and 55 of AP I, from which the Study derives the first sentence of Rule 45, do not reflect customary international law.[77]

Evaluating the US position

Since the United States is not a party to AP I, its position must be assessed against the requirements for the formation of a customary international law rule. As the ICJ has repeatedly observed, it is "axiomatic that the material of customary international law is to be looked for primarily in the actual practice and *opinio*

73 Ronald Reagan, "Message to the Senate Transmitting a Protocol to the 1949 Geneva Conventions", 29 January 1987, available at: www.reaganlibrary.gov/archives/speech/message-senate-transmitting-protocol-1949-geneva-conventions.

74 His presentation remains the touchstone for the United States' views on AP I.

75 M. J. Matheson, above note 43, p. 424; see also US Land Handbook, above note 20, para. 2-143 ("The United States has not accepted these provisions and repeatedly expressed the view that they are overly broad and ambiguous and do not constitute customary international law").

76 ICRC Customary Law Study, above note 7, commentary accompanying Rule 45, p. 151. On persistent objectors, see the below section entitled "Persistent Objector Status".

77 J. B. Bellinger III and W. J. Haynes Jr, above note 19, p. 455.

juris of States".[78] Both elements must be established; if they are not, a customary rule does not exist.[79]

State Practice

With respect to the first element, the practice in question must be sufficiently dense before it leads to the crystallization of a customary rule. In its *North Sea Continental Shelf* judgment, the ICJ observed that "very widespread and representative" practice is required, from which a discernable pattern of behaviour can emerge.[80] Consequently, State practice contrary to a purported customary rule augers against its existence.

Since there have been very few, if any, intentional operations causing Rule 45's level of environmental harm, it cannot be said that *affirmative* actual practice precludes such a rule. But in some circumstances, State *inaction* qualifies as practice bearing on the existence of a customary rule.[81] Relying on this observation, the ICRC suggests that Rule 45 "is supported, in part, by the abstention from operations causing the threshold damage".[82]

In our opinion, this is a flawed assertion because inaction is only relevant when *deliberate*. A State must consciously decide to refrain from conducting an operation likely to cause widespread, long-lasting or severe damage in order to provide the requisite State practice[83] – and the ICRC, in fact, acknowledges the need for conscious abstention elsewhere in its Customary Law

78 ICJ, *Continental Shelf (Libyan Arab Jamahiriya/Malta)*, Judgment, *ICJ Reports 1985*, para. 27. See also Statute of the International Court of Justice, 59 Stat. 1055, 26 June 1945, Art. 38(1)(2); ICJ, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Merits, Judgment, *ICJ Reports 1986*, para. 183.

79 ILC, *Draft Conclusions on Identification of Customary International Law, with Commentaries*, 2018 (ILC Draft Conclusions), commentary accompanying Conclusion 2, para. 2. It should be noted that in many cases a singular act may constitute evidence of both; for instance, an official statement concerning a rule or purported rule would likely constitute both verbal practice and an expression of *opinio juris*. *Ibid.*, commentary accompanying Conclusion 3, para. 8; J. B. Bellinger III and W. J. Haynes Jr, above note 19, p. 446; Jean-Marie Henckaerts, "Study on Customary International Humanitarian Law: A Contribution to the Understanding and Respect for the Rule of Law in Armed Conflict", *International Review of the Red Cross*, Vol. 87, No. 857, 2005, p. 182.

80 ICJ, *North Sea Continental Shelf*, Judgment, *ICJ Reports 1969*, para. 73. Note that, in addition to being "very widespread and representative", the Court also characterized the requisite standard for State practice as being "extensive and virtually uniform": *ibid.*, para. 74. These two phrases arguably articulate different thresholds for State practice to qualify as "general". See *Identification of Customary International Law: Comments and Observations Received from Governments*, UN Doc. A/CN.4/716, 14 February 2018 (State Comments to ILC Draft Conclusions), pp. 32, 34. In our assessment, the evidence of State practice under review does not satisfy either standard; thus, determining which is correct as a matter of law is immaterial to our analysis and, accordingly, beyond the scope of this article.

81 ILC Draft Conclusions, above note 79, Conclusion 6(1).

82 Jean-Marie Henckaerts, "Customary International Humanitarian Law: A Response to U.S. Comments", *International Review of the Red Cross*, Vol. 89, No. 866, 2007, p. 482.

83 Permanent Court of International Justice, *The Case of the S. S. "Lotus" (France v. Turkey)*, Judgment, 1927, p. 28; ILC Draft Conclusions, above note 79, commentary accompanying Conclusion 6, para. 3; State Comments to ILC Draft Conclusions, above note 80, p. 28.

Study.[84] It is, of course, difficult to assess whether States, including the United States, have deliberately abstained from conducting operations generating such damage to the natural environment.[85] Indeed, when Article 35(3) of AP I was drafted, there was "a widely shared assumption that battlefield damage incidental to conventional warfare would not normally be proscribed by the provision".[86] Accordingly, it cannot be said with any reasonable degree of confidence that States, at least those not party to the Protocol, have deliberately (*vice* incidentally) abstained from causing widespread, long-lasting and severe environmental damage.

Given these standards, it is reasonable for the United States to conclude that State practice in support of special protection for the environment is insufficiently dense to satisfy customary international law's high crystallization threshold. While a comprehensive treatment of the evidence cited in the ICRC Customary Law Study is beyond the scope of this article, suffice it to say that we are not convinced that the collective body of practice is "widespread and representative".

Some States, for instance, have repeatedly maintained that Rule 43, which proscribes damage to the environment regardless of whether it constitutes a civilian object, needs to be narrowed before accurately reflecting the general practice of States.[87] Recall that the United States points to the absence of general practice in support of its position. As it concerns the proportionality component of Rule 43, Israel has likewise stated that it

> is unaware of any State which, upon attacking a military base in a remote area, would consider expected damage to surrounding bushes, rocks or soil as damage to civilian objects that ought to be incorporated in the proportionality assessment relating to the attack.[88]

Our experience with US armed forces and other States with which they operate, such as their NATO allies, is identical. This negative practice contravening the purported rule's stated breadth indicates that it has not attained customary status.

We are, of course, cognizant that *some* inconsistency may not be fatal to a determination that a general practice exists. As the ICJ later clarified in its *Paramilitary Activities* judgment:

84 ICRC Customary Law Study, above note 7, pp. xxxix–xl ("If the practice largely consists of abstention combined with silence, there will need to be some indication that the abstention is based on a legitimate expectation to that effect from the international community").

85 See Nuclear Weapons Advisory Opinion, above note 13, para. 66 (contrasting the policy of deterrence with legal obligations).

86 *Official Records of the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts, Geneva, 1974–1977*, Vol. 15, CDDH/215/Rev.1, Federal Political Department, Bern, 1978, para. 27.

87 See e.g. State Comments to ILC Draft Principles, above note 19, pp. 71 (Israel) ("It is the position of Israel that under customary international law, the 'natural environment' in the abstract is not the subject of protection under the law of armed conflict, and treating it as such will be incorrect both legally and practically. As several members of the Commission have also pointed out, it is specific elements of the environment that may be the subject of protection. The protection afforded to these elements depends on the applicable rule concerned"), 79 (United States) ("[T]he natural environment is not always a "civilian object" but receives the protection afforded civilian objects insofar as it constitutes a civilian object").

88 *Ibid.*, p. 17.

> It is not to be expected that in the practice of States the application of the rules in question should have been perfect …. The Court does not consider that, for a rule to be established as customary, the corresponding practice must be in absolutely rigorous conformity with the rule. In order to deduce the existence of customary rules, the Court deems it sufficient that the conduct of States should, in general, be consistent with such rules, and that instances of State conduct inconsistent with a given rule should generally have been treated as breaches of that rule, not as indications of the recognition of a new rule.[89]

This does not, however, affect our conclusion that the US position is reasonable in light of the totality of State practice. The reality is that there is little evidence of States refraining from operations *that they would otherwise have conducted* because of the risk of causing widespread, long-lasting and severe environmental damage. Similarly, we are aware of no actual, in contrast to verbal, practice of States treating every aspect of the environment as a civilian object, damage to which an attacker must consider in proportionality and precautions in attack analyses. Nor have States relied on any exceptions or other justifications for their behaviour from which one could reasonably infer that an applicable rule has crystallized. And public denials that such rules exist amount to verbal practice (and *opinio juris*) standing in the way of the crystallization of the purported customary rules.

Moreover, the notion of specially affected States further counsels against a finding that the rules are customary in character. Such a status was first raised by the ICJ in its *North Sea Continental Shelf* judgment, where it implied that the views and actions of specially affected States are of heightened importance in determining the content of customary international law. Thus, when assessing whether a practice is sufficiently dense,

> an indispensable factor to be taken into account is the extent to which those States that are particularly involved in the relevant activity or are most likely to be concerned with the alleged rule ("specially affected States") have participated in the practice.[90]

This is because these States often have a "greater quantity and quality of practice" due to their "depth of experience" with certain rules.[91] Provided that the assessment of the evidence supporting a purported rule is contextual, searching, and reflective of careful consideration of its credibility,[92] specially affected States should receive some degree of deference when identifying customary rules.

Against this backdrop, the ICRC acknowledges that "if 'specially affected States' do not accept [a] practice, it cannot mature into a rule of customary

89 ICJ, *Nicaragua*, above note 78, para. 186. Complete or perfect consistency, therefore, may not be required, so long as the practice is, as the ILC's commentary to its 2018 *Draft Conclusions on Identification of Customary International Law* suggests, "virtually or substantially uniform". ILC Draft Conclusions, above note 79, commentary accompanying Conclusion 8, para. 7.

90 ILC Draft Conclusions, above note 79, commentary accompanying Conclusion 8, para. 4; J. B. Bellinger III and W. J. Haynes Jr, above note 19, p. 445 and fn. 4.

91 J.-M. Henckaerts, above note 82, p. 481.

92 ILC Draft Conclusions, above note 79, commentary accompanying Conclusion 3, para. 2.

international law …. Who is 'specially affected"' will vary according to circumstances."[93] It further notes that, "[w]ith respect to any rule of international humanitarian law, countries that participated in an armed conflict are 'specially affected' when their practice examined for a certain rule was relevant to that armed conflict".[94]

Along the same lines, the United States maintains that "the practice of States that have relatively little history of participation in armed conflict and the practice of States that have had a greater extent and depth of experience or that have otherwise had significant opportunities to develop a carefully considered military doctrine" are neither similarly situated nor equivalent in terms of crystallizing customary international law.[95] A State is only specially affected to the extent that it engages in armed conflict; speculation as to how rules *might* be applied by a State that does not carries far less weight.

Although not essential to our conclusion, considering the frequency with which they find themselves in armed conflict, we believe that Israel and the United States are specially affected States. Therefore, their actual and verbal practice are afforded significant weight in the customary law assessment. While the precise extent to which the practice of specially affected States *must* be considered is unsettled,[96] it is reasonable to infer that, at a minimum, the practice and imprimatur of these and other specially affected States is especially persuasive when assessing whether a rule is customary.[97]

But even assuming solely for the sake of analysis that there are no specially affected States with respect to the impact of warfare on the environment, it would be difficult to find that Rules 43–45, as articulated, reflect the general practice of States. Moreover, should general practice exist, it has not been "accepted as law" by States, at least not to the level necessary to crystallize a customary rule of IHL.

Opinio juris

The "subjective" element of customary international law is that the relevant State practice must reflect State *opinio juris*.[98] It is well established that

> [n]ot only must the acts concerned amount to a settled practice, but they must also be such, or be carried out in such a way, as to be evidence of a belief that this

93 ICRC Customary Law Study, above note 7, pp. xliv–xlv.

94 *Ibid.*, p. xlv. Yet, the ICRC would presumably assert that, as regards the environment, it can be said that all States nonetheless have an interest in environmental protection: *ibid.*, p. xlv ("Notwithstanding the fact that there are specially affected States in certain areas of international humanitarian law, it is also true that all States have a legal interest in requiring respect for international humanitarian law by other States, even if they are not a party to the conflict"). As further support, it would likely cite the "transnational importance" of the environment that is highlighted in the commentary to Article 35 of AP I: see ICRC Commentary on the APs, above note 65, paras 1441, 1462.

95 J. B. Bellinger III and W. J. Haynes Jr, above note 19, pp. 445–446.

96 ICJ, *North Sea Continental Shelf*, above note 80, paras 73–74.

97 See Yoram Dinstein, "The ICRC Customary International Humanitarian Law Study", *International Law Studies*, Vol. 82, 2006, p. 109 ("If several 'States whose interests are specially affected' object to the formation of a custom, no custom can emerge").

98 ILC Draft Conclusions, above note 79, Conclusions 2, 9.

> practice is rendered obligatory by the existence of a rule of law requiring it. … The States concerned must therefore feel that they are conforming to what amounts to a legal obligation.[99]

Accordingly, acting out of a sense of legal obligation must be distinguished from other motivations for State behaviour, including political policy, practical expediency or equitable (in contrast to legal) principles of comity.[100]

Again, in light of this standard, we find that US objections to the evidence relied upon by the ICRC are objectively reasonable. One need look no further, for example, than the relative abundance of States that have expressly declared that the relevant environmental provisions of AP I, upon which Rule 45 is based, do not accurately reflect customary international law.[101] Those and similar denials with respect to the expansive scope of Rules 43 and 44, especially those of specially affected States, are an insurmountable obstacle to a determination that the rules are customary in nature. Such *opinio juris* denying the customary status of the purported rules contrasts with the relative paucity of that supporting them.

A more searching examination reveals additional support for our view. In furtherance of Rule 44, for instance, the ICRC asserts that "some military manuals, official statements and reported practice" evidence a "general need to protect the environment during armed conflict"[102] – but to the extent that this is true, there is little evidence that they do so out of a sense of *opinio juris* rather than for reasons of political or military expediency or convenience.[103] As the United States has repeatedly emphasized in statements to the ICRC and to the Sixth Committee throughout the proceedings that led to the ILC's eventual adoption of the PERAC Principles, "protection of the environment during armed conflict is desirable *as a matter of policy* for a broad range of reasons, including for military, civilian health, and economic welfare-related reasons, in addition to

99 ICJ, *North Sea Continental Shelf*, above note 80, para. 77; see also ICJ, *Nicaragua*, above note 78, para. 184.

100 See ICJ, *Asylum Case (Colombia v. Peru)*, Judgment, *ICJ Reports 1950*, p. 286; ICJ, *North Sea Continental Shelf*, above note 80, para. 77; ICJ, *S. S. "Lotus"*, above note 83, p. 28. See also ILC Draft Conclusions, above note 79, commentary accompanying Conclusion 9, para. 3. For instance, concerning the use of nuclear weapons, a general practice of refraining from the use of such weapons, even over the course of several decades, would not indicate that the practice is accepted as law if done so simply "because the circumstances that might justify their use have fortunately not arisen". Nuclear Weapons Advisory Opinion, above note 13, para. 66.

101 See e.g. J. B. Bellinger III and W. J. Haynes Jr, above note 19, pp. 455–456; State Comments to ILC Draft Principles, above note 19, pp. 68 (Canada), 70 (France), 71 (Israel), 77 (United States); M. J. Matheson, above note 43, p. 424.

102 ICRC Customary Law Study, above note 7, p. 148.

103 For example, the study cites as support the US *Commander's Handbook on the Law of Naval Operations*, which provides that "[a] commander has an affirmative obligation to avoid unnecessary damage to the environment to the extent that it is practicable to do so consistent with mission accomplishment. To that end, and as far as military requirements permit, methods or means of warfare should be employed with due regard to the protection and preservation of the natural environment." US Naval Handbook, above note 59, sec. 8.4. That the ICRC could construe such language broadly is self-evident, but that passage, and similar provisions in other US manuals, must be interpreted within the context of and in deference to clear expressions of US *opinio juris* which unequivocally state that parts of the environment are only protected insofar as they constitute civilian objects. Moreover, that the exhortation reflects policy or military expediency is indicated by usage of the generally hortatory term "should", rather than the binding terms "must" or "shall".

environmental ones as such".[104] The United States has consistently reiterated that many of the principles inappropriately indicate they are binding in nature, rather than simply reflecting sound policy or a best practice.[105]

Moreover, it is critical to emphasize that even if a practice is motivated by a sense of legal obligation, it is only relevant to the formation of customary international law if it pertains to acceptance of law that is both *customary* and *international* in nature.[106] *Opinio juris* must therefore be further distinguished from obligations that, albeit legal in character, are motivated solely by adherence to treaty requirements or domestic law.[107]

This is not to say that treaties are irrelevant to customary international law; on the contrary, treaties may, under certain circumstances, be pertinent evidence of the existence or emergence of customary rules, as when a treaty provision is adopted to codify customary law.[108] Still, to be relevant to the existence of a customary rule, the *opinio juris* in question must unambiguously and conclusively show that a rule is considered customary in nature and exists independently from a corresponding treaty or domestic law obligation.

Therein lies another flaw in the ICRC's reasoning. With respect to Rule 45, for example, the ICRC Customary Law Study relies in large part on the fact that AP I is widely, albeit not universally, ratified. The problem with that assertion is that non-party States like Israel and the United States object to the characterization of Articles 35(3) and 55 as being reflective of customary international law. More to the point, even some parties to the Protocol, such as Canada and France, have expressly stated

104 Mark Simonoff, "Remarks at a UN General Assembly Sixth Committee Session on Agenda Item 81: Report of the International Law Commission on the Work of its 63rd and 65th Sessions, 4 November 2013", in Office of the Legal Advisor, US Department of State, *Digest of United States Practice in International Law*, 2013, p. 234; J. B. Bellinger III and W. J. Haynes Jr, above note 19, p. 455; see also Stephen Townley, "Remarks at the 69th General Assembly Sixth Committee on the Work of the International Law Commission During its 66th Session, 5 November 2014", in Office of the Legal Advisor, US Department of State, *Digest of United States Practice in International Law*, 2014, p. 299.

105 State Comments to ILC Draft Principles, above note 19, pp. 28–29. In another example, the Civilian Harm Mitigation and Response Action Plan recently promulgated by the US DoD states that "[h]ard-earned tactical and operational successes may ultimately end in strategic failure if care is not taken to protect the civilian environment as much as the situation allows – including the civilian population and the personnel, organizations, resources, infrastructure, essential services, and systems on which civilian life depends". DoD, *Civilian Harm Mitigation and Response Action Plan (CHMR-AP)*, 25 August 2022, p. 1, available at: https://media.defense.gov/2022/Aug/25/2003064740/-1/-1/1/CIVILIAN-HARM-MITIGATION-AND-RESPONSE-ACTION-PLAN.PDF. There is little doubt that the "civilian environment" referred to includes certain parts of the natural environment, but that policy does not alter the United States' long-standing position with respect to the protections afforded to the environment as a matter of law. As it makes clear, "[n]othing in [the] plan is intended to suggest that existing DoD policies or practices are legally deficient or that the actions to be implemented pursuant to this plan are legally required, including under the law of war. The U.S. military routinely implements heightened policy standards and processes that are more protective of civilians than, and supplementary to, law of war requirements, without such standards and processes modifying or creating new legal requirements." *Ibid.*, p. 3 fn. 1.

106 ICJ, *North Sea Continental Shelf*, above note 80, paras 77–78.

107 Nuclear Weapons Advisory Opinion, above note 13, para. 31; ILC Draft Conclusions, above note 79, commentary accompanying Conclusion 9, para. 4.

108 ILC Draft Conclusions, above note 79, Conclusion 11; State Comments to ILC Draft Conclusions, above note 80, p. 45 (concurring in the Conclusion's text).

that they are *not*.[109] In light of these positions, all that can be said is that the articles bind States Parties as a matter of treaty law.

Thus, considering the high threshold required for customary international law, we believe that the US positions relative to the ICRC Customary Law Study's environment-specific rules are reasonable. But we further observe that even had the purported customary rules crystallized, they would not bind the United States, which would be exempt from their obligations as a "persistent objector".[110]

Persistent objector status

By their nature, rules of customary international law are binding on all States, including those that do not recognize them as such. Nevertheless, it is well recognized that "[w]hen a State has persistently objected to an *emerging* rule of customary international law, and maintains its objection after the rule has crystallized, that rule is not opposable to it".[111] The objection must be clearly and persistently communicated to other States to fall within the exception. Further, the exception has a timeliness requirement; failure to object to the rule while it is emerging is a permanent bar to claiming its benefits.

Within that context, it is critical to distinguish the notion of specially affected States from that of persistent objectors. Whereas the former prevents a norm from *becoming* a customary rule, the latter prevents an emerging rule from prospectively *binding* a State once it crystallizes. The existence of a customary rule is, therefore, a necessary condition precedent to a State qualifying as a persistent objector.

We acknowledge that the applicability of persistent objector status vis-à-vis IHL is not universally accepted. For example, Conclusion 15 of the ILC's *Draft Conclusions on Identification of Customary International Law* (ILC Draft Conclusions) implies that the status may not apply to peremptory norms of general international law (*jus cogens*).[112] The ICRC has queried whether the status applies within the context of humanitarian law, taking no position on the matter.[113]

While we agree that certain IHL rules, such as the prohibition on directly attacking civilians, are peremptory in character, it is overbroad to suggest that every rule in this body of law has achieved that status. To be sure, the

109 State Comments to ILC Draft Principles, above note 19, pp. 68 (Canada), 70 (France), 71 (Israel), 77 (United States).

110 While we see no reason to doubt the US position that the relevant rules do not qualify as customary law, our analysis that follows assumes they do solely for the purpose of illustration.

111 ILC Draft Conclusions, above note 79, commentary accompanying Conclusion 15, para. 1 (emphasis in original); see Y. Dinstein, above note 96, p. 109.

112 See ILC Draft Conclusions, above note 79, Conclusion 15(3) and accompanying commentary, para. 10. A peremptory norm is "a norm accepted and recognized by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character". Vienna Convention on the Law of Treaties, 1155 UNTS 331, 23 May 1969 (entered into force 27 January 1980), Art. 53.

113 ICRC Customary Law Study, above note 7, p. xlv.

environmental rules at stake can hardly be deemed peremptory given the absence of State consensus in support of that notion.

Seeing no reason to doubt that the persistent objector doctrine applies to the environmental rules (assuming solely for the sake of analysis that they are customary), the United States would qualify as a persistent objector. There is no debate over whether the proscriptions in Articles 35(3) and 55 of AP I were novel when that treaty was ratified; thus, they could only have emerged as a customary rule after the Protocol went into force. Although the United States had few concerns with the articles when it was considering ratifying the Protocol, once it determined that it would not, it unambiguously and persistently maintained its objection to the provisions. The ICRC concedes as much in its commentary to Rule 45.[114] And with respect to Rules 43 and 44, the United States has similarly repudiated claims that the customary rules upon which they are based should be applied so expansively in the environmental context.[115] Thus, to the extent that they are distinct from the conduct-of-hostility rules pertaining to protected objects, there is little doubt that the United States would qualify as a persistent objector to any new or emerging environmental protections identified in the ICRC Customary Law Study. They would not bind the United States, even assuming they reflected customary international law.

Current ambiguities in the US position

Although we conclude that the US position relative to the environmental aspects of IHL is reasonable, we also believe it is not without its faults. As the preceding analysis implies, several ambiguities within the US position hinder attempts to understand and anticipate how the United States may apply IHL to the natural environment. Because it is a highly influential and specially affected State, clarifying these areas would likely cultivate a greater appreciation of U.S. approaches to the subject and contribute to the progressive development of the law.

One such ambiguity is how the United States conceptually and substantively defines the "environment" within the context of IHL. While it has described the environment as a "collection of individual elements" rather than a "single concept or object",[116] it is still not clear *which* elements are included. For instance, there is little doubt that, by the US understanding of certain prohibitions, components of the environment include the crop fields of Vietnam and the coastal waters of the Persian Gulf. But do they also encompass

114 ICRC Customary Law Study, above note 7, commentary accompanying Rule 45, p. 151.

115 See e.g. State Comments to ILC Draft Principles, above note 19; J. B. Bellinger III and W. J. Haynes Jr, above note 19, p. 455 (noting that only "parts of the natural environment cannot be made the object of attack unless they constitute military objectives, as traditionally defined"); M. Simonoff, above note 66, p. 2 ("We also recommend that principle II-3 be eliminated or revised – perhaps with the addition of a caveat such as 'where appropriate – in that environmental considerations will not in all cases be relevant in applying 'the principle of proportionality and the rules on military necessity' in the context of *jus in bello*'").

116 M. Simonoff, above note 66, p. 18.

interconnected elements such as the wildlife living within those parts or the air surrounding them? And does the answer depend on the particular rule or the factual context in question?

The challenges that this lack of clarity presents are hardly purely academic, for they result in a body of law that may be difficult to apply on the battlefield. How, for instance, is proportionality to be calculated if there is uncertainty as to which elements of the environment are to be considered civilian objects? Or when, as a matter of law, does the incidental impact on the environment of an attack on a military objective trigger the obligation to take precautions in attack because it qualifies as damage to a civilian object? On the one hand, uncertainty could lead to a legally unnecessary decision to refrain from an attack that would yield a military advantage. On the other, uncertainty may also result in attacks contrary to those environmental protections which the United States believes *do* apply in armed conflict.

Unfortunately the United States is not alone in this regard, for none of the instruments referenced in this article define the term "environment" with adequate precision.[117] Similarly, there is no consensus regarding the term's scope vis-à-vis customary international law.[118] Nevertheless, as a specially affected State that has engaged in a significant number and variety of armed conflicts since the environmental aspects of IHL first emerged, clarifying how the United States interprets the concept could potentially avoid haphazard interpretation or application of the law. At the very least, it would likely prove influential in shepherding agreement regarding the precise contours of the term's scope as it pertains to customary international law.

A related ambiguity is how the United States calculates harm that might befall the environment during military operations in armed conflict. For instance, to the extent that the environment enjoys the protections afforded to civilian objects, should collateral damage be assessed like other objects? Or does the nature of the environment distinguish it in kind from manufactured objects, such as buildings, equipment or critical infrastructure? Should harm to the environment be evaluated based on its impact on the civilian population (the anthropocentric approach), or does the environment have intrinsic value forming the basis for calculating such rules as proportionality? Must attackers inquire into the fragility of applicable parts of the environment, such as an ecosystem on the brink of collapse, when making these calculations? Considering the extent to which parts of the environment are interrelated and how irreversible environmental impacts may be, these questions loom larger in the environmental context than in others.

Similar obscurities no doubt remain, and there is little question that the United States acknowledges them – yet, instead of working to clarify these areas, it has largely leveraged the law's opacity for political flexibility. As an example, when responding to the ICRC Customary Law Study, the United States primarily

117 See AMW Manual Commentary, above note 68, commentary accompanying Section M, para. 5.
118 See *ibid.*, commentary accompanying Rule 88, para. 1.

attacked the evidence underlying the ICRC's purported rules, but it did not provide alternative conclusions as to the law's content. In short, one could describe the United States' approach to the post-Vietnam environmental conversation as somewhat defensive and reactive; it has not assumed a proactive, descriptive posture that could lend some coherence to the law, especially given its leadership potential in the field.

Concluding thoughts

The extent to which IHL protects the environment is, unfortunately, ill-settled. This is due in part to the United States' unwillingness to ratify AP I and its resistance to legal interpretations expressed in the ICRC Customary Law Study. Beyond broad agreement that the prohibition against wanton destruction and the conduct-of-hostility rules, in their varying treaty and customary expressions, offer non-specific environmental protections, there is little consensus as to precisely how IHL's current framework applies to the environment and its constituent parts.

Yet, within that context, we find the US position reasonable. In light of the constitutive elements of customary international law, there is little support for the contention that the relevant provisions in AP I or the entirety of the purported rules pertaining to the environment in the ICRC Customary Law Study have crystallized into customary international law. They neither reflect the general practice of States, nor is there sufficient evidence of their acceptance as customary law. Simply put, they do not satisfy the high bar for customary law status that is well established in international law.

Even if we were to find the US position legally unsupportable, however, we would not consequently conclude that the assertion of an incorrect characterization by the United States has had, or would have, any meaningful or practical significance with respect to protecting the environment during armed conflict. After all, it is difficult to imagine a scenario in which the United States has caused or would cause, for example, widespread, long-term and severe environmental damage using the conventional means and methods of war that the US military currently employs.

Moreover, even though the United States rejects the assertion that the natural environment is intrinsically civilian in nature, we are unpersuaded that including *all* elements of the environment when assessing the incidental effects from attacks on nearby military objectives – assuming they are not intimately associated with and incorporated into those objectives in the first place – would be of any consequence to modern military operations. There are very few instances, in our professional experience, in which incidental damage to a part of the environment not considered by the United States to be a civilian object would ever be excessive in relation to the anticipated military advantage. In cases where incidental damage to pertinent parts of the environment might be high enough to be considered excessive, the United States would, in all likelihood, *already* consider those parts to be civilian objects. In our view, any friction between US

and competing interpretations is, therefore, of minimal practical significance to actual military operations.

Accordingly, clarifying current ambiguities in the US position would exert greater influence on the law's development and offer greater protection for the environment than adopting broader interpretations of the law. Absent clarification of what the "environment" consists of or how damage to its components is calculated, the United States risks having obscurity cloud its interpretation and application of the law on the battlefield.

International Review of the Red Cross (2023), **105** (924), 1293–1312.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000267

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The 2022 Political Declaration on the Use of Explosive Weapons in Populated Areas: A tool for protecting the environment in armed conflict?

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Abstract

In November 2022, eighty-three States endorsed the Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas (Political Declaration). The Political Declaration is a new and significant development in the long-standing and ongoing efforts to protect civilians from the use of explosive weapons in populated areas – an issue which has been of growing concern for a number of states, the United Nations, the International Committee of the Red Cross and civil society for more than a decade.

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The use of explosive weapons in populated areas has been documented to result in widespread civilian deaths and injuries as well as longer-term harm to civilians resulting from damage to or the destruction of hospitals, water and sanitation systems and electrical power grids. Although less researched, the use of explosive weapons in populated areas also plays a prominent role in damaging and destroying the environment in situations of armed conflict.

This article examines the potential of the new Political Declaration for strengthening the protection of the environment. An express reference to the environment, and the impact of explosive weapons thereon, exists only in the Declaration's preamble, but the lack of express references to the environment in the Declaration's operative commitments does not mean it lacks potential as a tool for strengthening the protection of the environment. On the contrary, the preambular reference provides an important basis on which to argue that the armed forces of endorsing States must consider the protection of the environment in their efforts to implement a number of the Declaration's key operational commitments.

Keywords: explosive weapons in populated areas, Political Declaration on Explosive Weapons in Populated Areas, environment, protection of civilians.

Introduction

On 18 November 2022, the Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas[1] (Political Declaration) was formally endorsed by eighty-three States in Dublin, Ireland.[2] The Political Declaration is the culmination of almost three years of intergovernmental negotiations from November 2019 to June 2022, as well as more than a decade of advocacy by the United Nations (UN), the International Committee of the Red Cross (ICRC) and civil society organizations, represented in the International Network on Explosive Weapons (INEW). It sets new international standards for protecting civilians from the use of bombs, rockets, artillery and other explosive weapons in populated areas during situations of armed conflict.

The use of explosive weapons in populated areas has been documented to result in widespread civilian deaths and injuries as well as longer-term harm to civilians resulting from damage to or the destruction of hospitals, water and sanitation systems and electrical power grids. Although less researched, the use of explosive weapons in populated areas also plays a prominent role in damaging and

1 *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas*, 18 November 2022 (Political Declaration), available at: www.dfa.ie/our-role-policies/international-priorities/peace-and-security/ewipa-consultations/ (all internet references were accessed in June 2023).

2 A list of endorsing States as of 18 November 2022 is available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/List-of-endorsing-states-18-November-2022.pdf.

destroying the environment in situations of armed conflict. A recent study on Ukraine, for example, noting the location in urban areas of commercial and industrial units, utility infrastructure, filling stations, workshops, fuel storage and garages, observes that the use of explosive weapons in such areas "can result in the contamination and release of a host of toxic and hazardous chemicals from damaged buildings and infrastructure [which] can create airborne contaminants and can contaminate water resources and/or underlying soils, negatively impacting human health".[3]

Given the apparent link between the use of explosive weapons and damage to the environment, this article seeks to examine the potential of the Political Declaration for strengthening the protection of the environment in armed conflict. The Declaration's preamble recognizes that "[t]he environment can … be impacted by the use of explosive weapons, through the contamination of air, soil, water and other resources". However, the Declaration is otherwise silent on specific operational steps that its endorser States should take to protect the environment from the use of explosive weapons.

This does not necessarily mean that the Political Declaration has no role in protecting the environment. The Declaration stipulates a range of operational commitments to be implemented by endorser States: key among these are the commitments to restrict or refrain from the use of explosive weapons when such use may be expected to harm civilians or civilian objects; factoring the foreseeable direct and indirect effects on civilians and civilian objects into the planning and execution of military operations; and collecting and sharing data in order to better understand and learn from the impact of the use of explosive weapons on civilians and civilian objects. The question this article asks is, to what extent and in what ways can the Declaration and these and other commitments be interpreted and implemented so as to strengthen the protection of the environment in armed conflict?

The first part of this article provides an overview of explosive weapons and the humanitarian and, in particular, environmental consequences resulting from their use in populated areas. The second part reviews efforts at the international level since 2009 to address the consequences of the use of explosive weapons in populated areas, which culminated in the process of intergovernmental consultations to develop the Political Declaration. It considers the extent to which the protection of the environment was addressed by States, the UN, the ICRC and civil society organizations during the consultation process and how the issue is subsequently reflected in the Declaration text. The third part of the article examines the extent to which the Political Declaration and some of the commitments therein might be interpreted and implemented to support strengthened protection of the environment in armed conflict. The article concludes with observations on the Declaration's potential, and importance, for strengthening the protection of the environment in armed conflict and from the use of explosive weapons in particular.

3 Linsey Cottrell, Eoghan Darbyshire and Kristin Holme Obrestad, "Explosive Weapons Use and the Environmental Consequences: Mapping Environmental Incidents in Ukraine", *Journal of Conventional Weapons Destruction*, Vol. 26, No. 1, 2022, pp. 46–47.

Explosive weapons and the environmental consequences arising from their use in populated areas

As armed conflict has become increasingly urbanized,[4] the use of explosive weapons in populated areas has emerged as a leading cause of harm to civilians.[5] Many types of explosive weapons exist and are currently in use – these include air-delivered bombs, artillery projectiles, missiles and rockets, mortar bombs and improvised explosive devices. Some are launched from the air and others are surface-launched. While different technical features dictate their accuracy of delivery and explosive effect, these weapons generally create a zone of blast and fragmentation with the potential to kill, injure or damage anyone or anything within that zone.[6] It is the blast and fragmentation effect of explosive weapons that makes their use in populated areas – i.e., areas that are likely to contain concentrations of civilians[7] – particularly problematic. The problems resulting from the use of explosive weapons in populated areas are especially pronounced and severe if the weapon has "wide area effects". These are generally understood to result from three characteristics, either individually or in combination: a substantial blast and fragmentation radius of the weapon, resulting from a large explosive content; inaccuracy of delivery, meaning that the weapon may land anywhere in a wide area, as may be the case with mortars, for example; and the use of multiple firings, sometimes designed to spread, affecting a wide area, such as in multiple-launch rocket systems.[8]

Unsurprisingly, the use of explosive weapons in populated areas has significant humanitarian and environmental consequences. In terms of the

4 As Gisel *et al.* observe, "over the last decades we have seen a resurgence of urban warfare in the Middle East and beyond, with an estimated 50 million people around the world bearing the brunt of it. Today's urban centres are often vulnerable to conflict for the very reasons they are key hubs of civilian life." Laurent Gisel, Pilar Gimeno Sarciada, Ken Hume and Abby Zeith, "Urban Warfare: An Age-Old Problem in Need of New Solutions", *Humanitarian Law and Policy Blog*, 27 April 2021, available at: https://blogs.icrc.org/law-and-policy/2021/04/27/urban-warfare/.

5 For example, beginning in 2009, concerns over the humanitarian consequences of the use of explosive weapons in populated areas have been consistently raised in the reports of the UN Secretary-General to the Security Council on the protection of civilians in armed conflict. These reports have included repeated calls from the Secretary-General for member States to take steps to address the problem. See *Report of the Secretary-General on the Protection of Civilians in Armed Conflict*, UN Doc. S/2009/277, 29 May 2009, para. 36.

6 United Nations Office for the Coordination of Humanitarian Affairs (OCHA), *Reducing the Humanitarian Impact of the Use of Explosive Weapons in Populated Areas: Compilation of Military Policy and Practice*, New York, 2017, p. 9.

7 The term "concentrations of civilians" is defined in Protocol III to the Convention on Certain Conventional Weapons as "any concentration of civilians, be it permanent or temporary, such as in inhabited parts of cities, or inhabited towns or villages, or as in camps or columns of refugees or evacuees, or groups of nomads". Protocol on Prohibitions and Restrictions on the Use of Incendiary Weapons (Protocol III) to the Convention on Prohibitions or Restrictions of the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, 1342 UNTS 137, 10 October 1980 (entered into force 2 December 1983), Art. 1(2).

8 OCHA, above note 6, p. 9. See, further, Article 36 and PAX, *Areas of Harm: Understanding Explosive Weapons with Wide Area Effects*, 2016; Kenneth Cross, Ove Dullum, Nick Jenzen-Jones and Marc Garlasco, *Explosive Weapons in Populated Areas: Technical Considerations Relevant to Their Use and Effects*, Armament Research Services, May 2016.

former, tens of thousands of civilians are killed and injured by explosive weapons every year. According to Action on Armed Violence (AOAV), between 2011 and 2020, 238,892 civilians were killed or injured by the use of explosive weapons in populated areas. Moreover, when explosive weapons are used in populated areas, on average, 91% of those killed or injured are civilians.[9] In 2016, the UN Secretary-General described the use of explosive weapons in populated areas as the "primary killer of civilians in conflict".[10]

As alarming as this is, it is important also to recognize that the impact of explosive weapons extends far beyond deaths and injury at the time of use.[11] The use of explosive weapons is associated with a widespread pattern of long-term harm resulting from damage to or destruction of essential civilian infrastructure, such as hospitals and water and electricity supply systems.[12] The damage to and destruction of such essential infrastructure has important "reverberating" or knock-on effects, the negative consequences of which can extend far in both time and space, affecting the provision of health care, water and electricity to a far broader proportion of the population than those within the vicinity of a specific attack.[13] The use of explosive weapons in populated areas is also a major driver of population displacement, both within and across international borders, as people flee due to fear of, or as a result of, attacks that damage or destroy their homes or livelihoods.[14] The use of explosive weapons inevitably results in the presence of explosive remnants of war (ERW) which pose a continued threat to civilians until they are identified and removed.[15]

Beyond these humanitarian consequences, and although much less researched, the use of explosive weapons in populated areas also has significant environmental consequences which can, in turn, further compound the risks to, and harm experienced by, civilians as described previously. These consequences are described by the Conflict and Environment Observatory (CEOBS) as

9 AOAV, *A Decade of Explosive Harm*, London, 2021, p. 3.

10 *One Humanity: Shared Responsibility – Report of the Secretary-General for the World Humanitarian Summit*, UN Doc. A/70/709, 2 February 2016, para. 52.

11 OCHA, above note 6, p. 9.

12 Mark Zeitoun and Michael Talhami, "The Impact of Explosive Weapons on Urban Services: Direct and Reverberating Effects across Space and Time", *International Review of the Red Cross*, Vol. 98, No. 1, 2016, p. 68.

13 For a discussion of the "reverberating effects" of the use of explosive weapons in populated areas, see Christine Wille and John Borrie, *Understanding the Reverberating Effects of Explosive Weapons: A Way Forward*, United Nations Institute for Disarmament Research (UNIDIR), Geneva, 2016; Isabel Robinson and Ellen Nohle, "Proportionality and Precautions in Attack: The Reverberating Effects of Using Explosive Weapons in Populated Areas", *International Review of the Red Cross*, Vol. 98, No. 1, 2016, p. 107. See also Christina Wille and Alfredo Malaret Baldo, *Reference Framework: Menu of Indicators to Measure the Reverberating Effects on Civilians of the Use of Explosive Weapons in Populated Areas*, UNIDIR, Geneva, 2021; Humanity and Inclusion, *Death Sentence to Civilians: The Long-Term Impact of Explosive Weapons in Populated Areas in Yemen*, 2020.

14 See, for example, Article 36, *Fleeing the Bombs: Approaching Explosive Weapons in the Policy Framework of Displacement*, Discussion Paper, 2017; Simon Bagshaw, "Driving Displacement: Explosive Weapons in Populated Areas", *Forced Migration Review*, No. 41, 2012.

15 See ICRC, *Explosive Weapons with Wide Area Effects: A Deadly Choice in Populated Areas*, Geneva, 2022, p. 54.

"diverse", with "typically … wide-ranging and long-lasting effects".[16] To begin with, buildings destroyed by explosive weapons can release hazardous materials into the air and on the ground, such as toxic smoke and heavy metals, which can have both chemical and physical impacts on health, including in the long term.[17] The destruction of buildings can also generate enormous volumes of debris which may contain ERW or other hazardous materials that pose further dangers to civilians and can hinder clearance operations and make debris difficult to recycle.[18] According to CEOBS, in Syria, for example, the volume of debris generated from the destruction in Aleppo and Homs is estimated at more than 20 million tonnes combined. It is estimated that its removal will require more than 1 million truckloads, generating emissions and pollution and taking years to complete[19] – assuming that the capacity to undertake such clearance even exists. Environmental governance in conflict-affected areas is often already weak, with a lack of capacity to manage debris on such a large scale.[20] The collapse of local governance and damaged infrastructure also affects solid waste management systems, resulting in uncontrolled dumping, open burning of waste and co-disposal with conflict debris. This causes further contamination, hinders recycling and negatively impacts the environment.[21]

As indicated above, the use of explosive weapons in populated areas can lead to widespread damage to and destruction of essential infrastructure, impeding the provision of services such as water and sanitation and electricity supply. Damage and destruction of wastewater treatment plants and collection systems, or their non-functioning due to interruptions to their power supply, can result in the contamination of groundwater, surface water or coastal waters by untreated sewage, thereby contaminating natural resources and affecting wider ecoservices, "impacting both people and ecosystems within and outside of urban areas".[22] In Gaza, for example, hostilities in May 2021 resulted in the destruction of 109 wastewater facilities, leading to the outflow of untreated sewage into streets, inland lakes and the Mediterranean Sea.[23]

Further environmental consequences and harm from the use of explosive weapons in populated areas result from the fact that "there are multiple potential sources of pollution within urban settings, and proportionately more people vulnerable to the risk of exposure to contaminants".[24] As indicated above, with commercial and industrial units, utility infrastructure, filling stations, workshops,

16 CEOBS, "We Must Not Ignore Explosive Weapons' Environmental Impact", *CEOBS Blog*, 12 May 2021, available at: https://ceobs.org/we-must-not-ignore-explosive-weapons-environmental-impact/. See also ICRC, above note 15, p. 59.
17 AOAV, *The Broken Land: The Environmental Consequences of Explosive Weapons Use*, London, 2020, p. 6.
18 *Ibid.*
19 CEOBS, above note 16.
20 *Ibid.*
21 *Ibid.* See also Doug Weir, "How Yemen's Conflict Destroyed its Waste Management System", *CEOBS Blog*, 1 August 2019, available at: https://ceobs.org/how-yemens-conflict-destroyed-its-waste-management-system/.
22 CEOBS, above note 16.
23 WASH Cluster State of Palestine, *Gaza WASH Cluster Damage Assessment*, 28 June 2021.
24 *Ibid.*

fuel storage and garages all being located in urban areas, the use of explosive weapons in populated areas "can result in contamination and the release of a host of toxic and hazardous chemicals from damaged buildings and infrastructure".[25] This can create airborne contaminants and can contaminate water resources and underlying soils, negatively impacting human health through direct contact, inhalation or ingestion of chemicals. Typical contaminants of potential concern include metals like lead and chromium, fuel oils, polychlorinated biphenyls (PCBs), fire retardants, explosives and asbestos. For example, during the Kosovo conflict in 1999, NATO air strikes reportedly damaged oil refineries and depots in Pancevo, resulting in widespread environmental damage as well as reports of "Pancevo cancer" among people from the area who were exposed to contaminants.[26] During the ongoing conflict in Ukraine, Russian forces are reported to regularly strike energy facilities that contain heavy oil, asbestos and PCBs which are carcinogenic, according to the UN Environment Programme.[27] Although in such cases some contaminants will disperse and eventually degrade in the environment, CEOBS observes that others do not and will persist for years.[28]

Concerns have also been raised with regard to the polluting effects of explosive weapons themselves. According to AOAV, it is well known that explosive weapons can be harmful to the environment, with consequences for human health.[29] Explosive munitions typically contain elements such as lead, antimony, uranium, dinitrotoluene, trinitrotoluene and hexahydro-1,3,5-trinitro-1,3,5-triazine "which can pollute soils and water and create long-term risks for civilians".[30] Concerns have also been raised over the polluting effects of ERW, the presence of which is an almost inevitable consequence of the use of explosive weapons in populated areas. According to PAX, for example, research indicates that toxic substances such as lead, mercury or depleted uranium may leak into the ground from ERW, or lead to direct exposure by civilians working with military scrap metal. Long-term accumulation of such substances "could result in significant health problems".[31]

Although not unique to the use of explosive weapons, the forced displacement of civilians, which is often caused and prolonged by attacks involving, and the destruction associated with, the use of explosive weapons as well as the

25 *Ibid.* See also L. Cottrell, E. Darbyshire and K. Holme Obrestad, above note 3.
26 AOAV, above note 17, p. 8.
27 Jeff Stein and Michael Birnbaum, "The War in Ukraine Is a Human Tragedy. It's also an Environmental Disaster", *Washington Post*, 13 March 2023, available at: www.washingtonpost.com/world/2023/03/13/ukraine-war-environment-impact-disaster/.
28 CEOBS, above note 16.
29 AOAV, above note 17, p. 12.
30 Roos Boer and Wim Zwijnenburg, "Exploring Environmental Harm from Explosive Weapons in Populated Areas", 28 May 2020, available at: https://paxforpeace.nl/news/blogs/exploring-environmental-harm-from-explosive-weapons-in-populated-areas.
31 *Ibid.*

presence of ERW,[32] can also result in significant environmental effects far from affected areas. As noted by CEOBS, "[d]isplacement camps themselves can, if not properly designed, severely and negatively impact the local environment through, for instance, deforestation due to the overharvesting of firewood, or improper waste disposal".[33] This is recognized in the International Law Commission's (ILC) Draft Principles on the Protection of the Environment in Relation to Armed Conflict (ILC Draft Principles). Principle 8 notes that States, international organizations and other relevant actors "should take appropriate measures to prevent, mitigate and remediate harm to the environment in areas where persons displaced by armed conflict are located, or through which they transit".[34]

The Political Declaration on Explosive Weapons in Populated Areas: A missed opportunity to strengthen the protection of the environment?

In November 2019, responding to the growing international concern at the devastating harm resulting from the use of explosive weapons in populated areas and following the 2019 Vienna Conference on the Protection of Civilians in Urban Warfare,[35] the Republic of Ireland launched a process of intergovernmental consultations aimed at developing a political declaration to address this critical issue. The consultations took place in February 2020, March 2021 and April and June 2022, involving the participation of States, the UN, the ICRC and civil society organizations, including through INEW. The final text of the Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas[36] was presented at the consultation in June 2022 and was formally endorsed by eighty-three States in November 2022 at an adoption conference in Dublin, Ireland.[37]

The Political Declaration consists of two parts: a preamble and an operative section. The preamble sets the scene, noting that as armed conflicts have become

32 For example, a 2016 study by Humanity and Inclusion found a strong correlation between forced displacement and the use of explosive weapons in populated areas in Syria. The majority of those interviewed for the study stressed that the main reason for leaving their homes was the use of explosive weapons in their villages, towns and cities. "In our interviews, explosive weapons were mentioned as the overriding factor forcing Syrians out as they fled from their homes." Humanity and Inclusion, *Escaping the Bombing – the Use of Explosive Weapons in Populated Areas and Forced Displacement: Perspectives from Syrian Refugees*, 2016, p. 4.

33 CEOBS, above note 16. See also Groupe URD, *Implications of Refugee Settlements on the Natural Environment and on Refugee and Host Community Resilience – Summary Case Studies: Lebanon and Cameroon*, August 2017.

34 ILC, *Draft Principles on the Protection of the Environment in Armed Conflict*, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2022, available at: https://legal.un.org/ilc/texts/instruments/english/draft_articles/8_7_2022.pdf.

35 See Republic of Austria Federal Ministry, "Vienna Conference on Protecting Civilians in Urban Warfare", available at: www.bmeia.gv.at/en/european-foreign-policy/disarmament/conventional-arms/explosive-weapons-in-populated-areas/protecting-civilians-in-urban-warfare/protecting-civilians-in-urban-warfare/.

36 See above note 1.

37 See above note 2.

more protracted, complex and urbanized, the risks to civilians have increased and must be addressed. These risks involve a range of factors, including the use of explosive weapons in populated areas, which has a devastating impact on civilians and civilian objects. Paragraphs 1.3–1.6 describe the broad range of humanitarian and other impacts, including direct effects, such as death and injury of civilians, and severe and long-lasting indirect or "reverberating" effects. Among these direct and indirect effects, the Declaration notes in paragraph 1.5 that "[t]he environment can also be impacted by the use of explosive weapons, through the contamination of air, soil, water and other resources".

The operative section provides a series of actions that endorser States are expected to implement as part of their overall commitment to

> strengthening the protection of civilians and civilian objects during and after armed conflict, addressing the humanitarian consequences arising from armed conflict involving the use of explosive weapons in populated areas, and strengthening compliance with and improving the implementation of applicable International Humanitarian Law.[38]

Key among these is the commitment in paragraph 3.3 that States will

> [e]nsure that [their] armed forces adopt and implement a range of policies and practices to help avoid civilian harm, including by restricting or refraining as appropriate from the use of explosive weapons in populated areas, when their use may be expected to cause harm to civilians or civilian objects.

The operative section is, however, silent on specific operational steps that militaries should take to ensure more effective protection of the environment. In fact, concern for the environmental impact of explosive weapons was virtually absent from the negotiations to begin with.

The initial "elements paper" that was circulated by Ireland in January 2020,[39] prepared on the basis of interventions made during the first consultation in November 2019 and written submissions received thereafter, contained no reference to the environment. This is not entirely surprising, as the November consultation saw very few references to the environment – of the States that were present, only Malaysia noted that harm to the environment from the use of explosive weapons in populated areas should be among the types of harm recognized in the future declaration.[40] INEW noted that "environmental degradation" should be among the impacts of explosive weapons recognized in the declaration text.[41]

38 *Chapeau* to the Political Declaration's operative section.

39 "Elements of a Political Declaration to Ensure the Protection of Civilians from Humanitarian Harm Arising from the Use of Explosive Weapons in Populated Areas", 20 January 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/EWIPA-Political-Declaration-Elements-Paper.pdf.

40 Women's International League for Peace and Freedom (WILPF), "Recommendations for a Political Declaration on the Use of Explosive Weapons in Populated Areas", January 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/WILPF-Written-Submission---18-November-2019.pdf.

41 INEW, *A Declaration to Prevent Harm from the Use of Explosive Weapons in Populated Areas*, Background Paper, September 2019, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Article-36-INEW-Written-Submission---18-November-2019.pdf.

The elements paper was discussed by States at the second consultation in February 2020. During the consultation, Finland specifically requested the inclusion of the "natural environment" in draft paragraph 1.2, which provided an overview of the impacts of the use of explosive weapons on civilians and civilian objects.[42] Finland believed that the natural environment was "among the casualties" and should be duly mentioned in the paragraph.[43] In addition to Finland, Panama, while not referring directly to the environmental impact of explosive weapons, requested that existing language in the elements paper referring to contamination by ERW should note that such contamination can include "hazardous chemicals, heavy metals and fuel hydrocarbons, impeding the return of displaced persons and causing casualties and long-term harm to human health".[44]

On the part of civil society, the Women's International League for Peace and Freedom (WILPF) noted that, in view of the increasing global concerns with environmental degradation,

> it would be prudent for the declaration to recognise the environmental impacts of the use of [explosive weapons in populated areas]. This could include the long-term harm posed by toxic remnants of war introduced or released into the environment by explosions, including hazardous chemicals, heavy metals, and fuel hydrocarbons.[45]

A joint submission by Human Rights Watch and Harvard Law School's International Human Rights Clinic (HRW/IHRC) called for damage to the environment to be included among the list of short- and long-term harms associated with the use of explosive weapons in populated areas.[46]

Despite such calls, the first draft of the Political Declaration that was circulated to States on 17 March 2020 did not include a reference to the environment.[47] However, the reaction to this first draft by some States, the UN and ICRC and a number of civil society organizations would lead to a positive

42 Paragraph 1.2 read: "Explosive weapons with wide area effects are having a devastating impact on civilians and civilian objects in populated areas. Beyond the immediate deaths, injuries, and psychological trauma, the civilian population can be exposed to severe and long-lasting harm as a result of the destruction of housing, schools, hospitals, energy networks, water and sanitation systems, cultural heritage sites and infrastructure."

43 "Finland Written Submission", 10 February 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Finland-Written-Submission---10-February-2020.pdf.

44 Written comments submitted by Panama, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Panama-Written-Paper-Submission---10-February-2020.pdf.

45 WILPF, "Response to the Draft Elements for a Political Declaration on the Use of Explosive Weapons in Populated Areas", February 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/WILPF-Written-Submission---10-February-2020.pdf.

46 HRW/IHRC, *Analysis of the Draft Elements of a Political Declaration on the Use of Explosive Weapons in Populated Areas*, February 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Human-Rights-Watch-Harvard-Written-Submission---10-February-2020.pdf.

47 *Draft Political Declaration on Strengthening the Protection of Civilians from Humanitarian Harm Arising from the use of Explosive Weapons in Populated Areas*, 17 March 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Draft-Political-Declaration-17032020.pdf.

evolution of the text. In their written comments on the first draft, Austria,[48] Finland,[49] Ecuador,[50] the Netherlands,[51] Panama[52] and Portugal,[53] as well as the UN,[54] ICRC,[55] INEW,[56] PAX,[57] Norwegian People's Aid[58] and HRW/IHRC,[59] noted the need for the draft declaration to refer to the environmental impact of the use of explosive weapons in populated areas. Panama proposed an operative paragraph in which States would commit to preventing and remediating the environmental impacts caused by the use of the explosive weapons in populated areas. Portugal proposed a standalone paragraph highlighting that the use of explosive weapons in populated areas

> can pose further threats to the environment, with effects lasting well after the armed conflict has reached its end, including the contamination of air, soil and groundwater, along with other environmental resources whose conservation is indispensable for the survival and livelihood of civilian populations. This could

48 "Draft Political Declaration Circulated by Ireland on 17 March 2020: Written Comments by Austria", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Austria-Written-Submission---17-March-2020.pdf.

49 "Comments by Finland on the Draft Political Declaration/EWIPA: Written Consultation", April 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/FINLAND-ewipa-kommentit-30.4.2020.pdf.

50 Written comments submitted by Ecuador, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Ecuador-Written-Submission---17-March-2020.pdf.

51 "Comments of the Kingdom of the Netherlands on the Draft Political Declaration on Strengthening the Protection of Civilians from Humanitarian Harm arising from the use of Explosive Weapons in Populated Areas", 30 April 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Netherlands-Written-Submission---17-March-2020.pdf.

52 "Panama's Proposals to the Draft Political Declaration on Strengthening the Protection of Civilians from Humanitarian Harm arising from the use of Explosive Weapons in Populated Areas", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Panama-Written-Submission---17-March-2020.pdf

53 "Portugal Contribution to the Project of Political Declaration on EWIPAs", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Portugal-Written-Submission---17-March-2020.pdf.

54 "Draft Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Harm Arising from the Use of Explosive Weapons in Populated Areas: Comments by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and the Office for Disarmament Affairs (ODA)", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/UNOCHA-UNODA-Written-Submission---17-March-2020.pdf.

55 "Draft Political Declaration on Strengthening the Protection of Civilians from Humanitarian Harm arising from the use of Explosive Weapons in Populated Areas: Comments by the International Committee of the Red Cross (ICRC)", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/ICRC-Written-Submission---17-March-2020.pdf.

56 "INEW Key Advocacy Points on the Draft Political Declaration on Strengthening the Protection of Civilians from Humanitarian Harm arising from the use of Explosive Weapons in Populated Areas", April 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/INEW-Written-Submission--17-March-2020.pdf.

57 "PAX Additional Comments on the Draft Political Declaration on Strengthening the Protection of Civilians from Humanitarian Harm arising from the use of Explosive Weapons in Populated Areas", April 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/PAX-Written-Submission---17-March-2020.pdf

58 "Norwegian People's Aid (NPA): Comments to the Draft Political Declaration", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/NPA-Written-Submission---17-March-2020.pdf.

59 HRW/IHRC, *Analysis of the Draft Political Declaration on the Use of Explosive Weapons in Populated Areas*, April 2020, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/HRW-IHRC-Written-Submission---17-March-2020.pdf.

potentially escalate into severe public health crises due to the lack of food, the rise of communicable diseases and inadequate healthcare.

Given the increased attention to the issue, it was perhaps unsurprising that the second draft of the Declaration text, circulated to states on 29 January 2021, included a specific reference to the "natural environment" in draft paragraph 1.3 which read: "The destruction of housing, schools and cultural heritage sites further aggravates civilian suffering, *and the natural environment can also be impacted by the use of explosive weapons with wide area effects, leading to the contamination of air, soil, groundwater, and other resources*. Urban warfare can also result in psychological and psychosocial harm to civilians [emphasis added]."[60]

The second draft was discussed during the third consultation in March 2021 (which was conducted online over three days due to the COVID-19 pandemic). Finland expressed its pleasure at seeing the inclusion of the natural environment "among the casualties" and further suggested that it could be moved to paragraph 1.2.[61] Finland did not explain the rationale for this additional request though it may have been intended to or perceived as raising the status and importance of the environment in the declaration text.[62]

Prior to the March 2021 consultations, CEOBS submitted written comments to Ireland on the second draft, including a number of proposed amendments to the text.[63] These included revisions to paragraph 1.3 which would have provided a fuller sense of the environmental impacts of the use of explosive weapons in populated areas,[64] as well as the insertion of references to "the environment" throughout the text, several of which had the express support of

60 *Draft Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences that Can Arise from the Use of Explosive Weapons with Wide Area Effects in Populated Areas: REV 1*, 29 January 2021, available at: www.dfa.ie/media/dfa/ourrolepolicies/internationalpriorities/290126-EWIPA-Political-Declaration-REV-1.pdf.

61 "Comments by Finland on the Draft Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences that can arise from the use of Explosive Weapons with Wide Area Effects in Populated Areas: Informal Consultations on 3–5 March 2021", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions3-5march/FINLAND-ewipa-kommentit-5.3.2021.pdf.

62 Paragraph 1.2 read: "Explosive weapons with wide area effects can have a devastating impact on civilians and civilian objects in populated areas. Blast and fragmentation effects cause immediate deaths and injuries. Beyond these direct effects, civilian populations can also be exposed to severe and long-lasting indirect effects – also referred to as 'reverberating effects'. When critical civilian infrastructure is damaged or destroyed, such as energy networks, water and sanitation systems, the provision of essential services such as healthcare is disrupted. These services are often interconnected and, as a result, damage to one component or service can negatively affect services elsewhere, causing harm to civilians that can extend far beyond the weapon's impact area."

63 CEOBS, "Proposed Amendments to the 29/01/21 Draft Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences that Can Arise from the Use of Explosive Weapons with Wide Area Effects in Populated Areas", 25 February 2021, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions3-5march/CEOBS_proposed_amends_EWIPA_dec_draft_290121.pdf.

64 CEOBS proposed amending paragraph 1.3 as follows (amendments in italics): "The destruction of housing, schools and cultural heritage sites further aggravates civilian suffering, *as does* damage to the *natural* environment. *The environmental impacts of the use of explosive weapons with wide area effects include the* contamination of air, soil, groundwater, and other resources, *both by weapons residues and by pollutants released by objects that are damaged or destroyed*. Urban warfare can also result in psychological and psychosocial harm to civilians" (footnote omitted). *Ibid.*

Panama.[65] For example, CEOBS, as well as the Dutch NGO PAX, recommended that draft paragraph 3.4, the commitment to take into account the direct and indirect effects on civilians and civilian objects in the planning and conduct of military operations, should also include an additional reference to the environment, so that it would read:

> Ensure that our armed forces take into account the direct and reverberating effects on civilians, civilian objects, *including the environment*, which can reasonably be foreseen in the planning of military operations and the execution of attacks in populated areas.[66]

The two organizations also called for draft paragraph 4.2, relating to the need for States to collect, share and make available data on the direct and reverberating effects on civilians of their military operations involving the use of explosive weapons with wide area effects, to be broadened to include data on the effects of such use on the environment.[67] CEOBS also noted its "strong support" for a proposed amendment by INEW,[68] proposed also by WILPF,[69] that the term "natural environment" be replaced with the term "environment" throughout the declaration. According to CEOBS,

> "[a]lthough the term natural environment is used in Additional Protocol I [to the Geneva Conventions], it is an artefact of the period of its development and does not reflect contemporary understanding of the relationship between people and the environment, nor of the value of the environment per se.[70]

Despite these various suggestions, the third draft of the Political Declaration, circulated on 3 March 2022, maintained the existing language of the previous draft, again stating in paragraph 1.3 that "the natural environment can also be impacted by the use of explosive weapons, leading to the contamination of air, soil, water, and other resources".[71] In its written comments on the second draft, CEOBS noted that its earlier proposals to highlight the critical link between environmental protection and the protection of civilians had not been included in

65 "Panama's Proposals on the Revised Version of the Draft Political Declaration on EWIPA (REV 1 – 29 January 2021)", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions3-5march/EWIPA-Political-Declaration-REV-1---Panamas-proposals-track-changes.pdf.

66 CEOBS, above note 63; PAX, "PAX Response to the 29 January 2021 Draft Political Declaration", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions3-5march/PAX-response-to-Jan-2021-version-of-the-political-declaration.pdf (emphasis added).

67 *Ibid.*

68 INEW, "INEW Comments on the Draft Political Declaration Text (29 January 2021)", February 2021, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions3-5march/INEW_Comments_PolDecl290121.pdf.

69 WILPF, "Comments on the Revised Draft Political Declaration on the Use of Explosive Weapons in Populated Areas", February 2021, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions3-5march/wilpf-ewipa-declaration-rev1.pdf.

70 CEOBS, above note 63.

71 *Draft Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the use of Explosive Weapons in Populated Areas: REV 2*, 3 March 2022, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/Draft-EWIPA-Political-Declaration-REV-2-CLEAN.pdf.

the second draft. Referring to the ongoing conflict in Ukraine, where there were "dozens of locations where damage from explosive weapons may have caused serious pollution incidents that may effect [*sic*] communities for long after the conflict" – risks that are "not unique to Ukraine" – CEOBS reiterated the importance of strengthening the declaration text to ensure that the environmental consequences of the use of explosive weapons are also highlighted. CEOBS again proposed a range of amendments to this end, along the same lines as those submitted on the previous draft, including in relation to paragraphs 3.4 and 4.2.[72]

Additional comments pertaining to the environment were forthcoming from other civil society actors, the UN and a small number of States. HRW/IHRC proposed that the phrase regarding environmental impacts in paragraph 1.3 should be rewritten in the active voice, in part to eliminate the use of the word "can", which "waters down the description of the harm caused". Thus, the relevant part of paragraph 1.3 would read: "*the use of explosive weapons in populated areas damages* the environment, leading to the contamination of air, soil, water, and other resources".[73] Norwegian People's Aid expressed support for CEOB's proposals, including, specifically, the deletion of the word "natural" before "environment" in paragraph 1.3.[74] The UN also supported deletion of the word "natural" and further requested the addition of a reference at the end of the current sentence on the environment to acknowledge that the use of explosive weapons in populated areas also generates "large amounts of dangerous wastes including military munition and debris", which, as it noted in its written comments, "can expose the population to environmental health risks and impede the return of displaced persons".[75] This addition was supported by Palestine.[76]

Chile and Mexico, in joint comments, also removed the word "natural" in paragraph 1.3. They further requested the inclusion of a new paragraph in the Political Declaration which recalls the specific protections under international humanitarian law (IHL) afforded to specific civilian objects, such as medical units and transports, cultural property and "the natural environment". Their actual proposal was, however, much less specific and limited to stating: "We recall the existing specific protections under IHL to specific civilian objects, particularly

72 CEOBS, "Comments on Rev 2 – Draft Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences from the Use of Explosive Weapons in Populated Areas", 4 April 2022, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions6-9april/Conflict-and-Environment-Observatory.pdf.

73 HRW/IHRC, *Analysis of the Draft Political Declaration on the Use of Explosive Weapons in Populated Areas*, April 2022, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions6-9april/HRW---Harvard-Law.pdf

74 Norwegian People's Aid, "Comments on the Second Revised Draft Political Declaration on EWIPA", April 2022, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions6-9april/Norwegian-Peoples-Aid.pdf.

75 "Comments on the Draft Declaration from the United Nations on Behalf of: OCHA, ODA, OHCHR, UNEP, UNHCR, UNICEF, UNIDIR, UNMAS", April 2022, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions6-9april/UN-joint-comments.pdf.

76 "Second Revised Draft Political Declaration Circulated by Ireland on 3 March 2022: Proposals by the State of Palestine", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions6-9april/State-of-Palestine.pdf.

relevant when conducting military operations in populated areas."[77] Panama also requested the deletion of the word "natural" from paragraph 1.3 and further requested that the paragraph also acknowledge loss of biodiversity as a consequence of the use of explosive weapons in populated areas.[78]

Of these various proposals, only that relating to the deletion of the word "natural" was reflected in the text of what became paragraph 1.5 of the final draft of the Political Declaration, as circulated to States on 25 May 2022. The relevant sentence was also revised slightly, presumably for stylistic reasons, to read as follows: "The environment can also be impacted by the use of explosive weapons, through [rather than "leading to"] the contamination of air, soil, water, and other resources."[79]

The Political Declaration's acknowledgement of the link between the use of explosive weapons in populated areas and environmental damage is certainly significant. It builds upon the increasing attention being paid to the impact of armed conflict on the environment as manifested, for example, in the recent reports of the UN Secretary-General on the protection of civilians in armed conflict,[80] the ICRC's issuance in 2020 of updated *Guidelines on the Protection of the Natural Environment in Armed Conflict* (ICRC Guidelines),[81] and, more recently, the adoption of the ILC Draft Principles.[82] The latter were formally taken note of by the UN General Assembly in December 2022, which brought them to the attention of "States, international organizations and all who may be called upon to deal with the subject" while also encouraging "their widest possible dissemination".[83]

At the same time, the absence of operative commitments in the Political Declaration by States and their militaries to take specific steps to protect the environment from explosive weapons could be interpreted as a missed opportunity. The inclusion of the environment, as called for by CEOBS and others, within the scope of operative paragraphs 3.4 and 4.2 of the Declaration, for example, could have made a significant contribution to efforts to strengthen the protection of the environment: first, in terms of ensuring that armed forces give due consideration to – and take steps to prevent and mitigate – the potential impact of the direct and indirect effects of military operations on the

77 "Protecting Civilians in Urban Warfare – Towards a Political Declaration to Address the Humanitarian Harm Arising From the Use of Explosive Weapons in Populated Areas. Consultation Process 6-8 April 2022: Comments by Chile and Mexico", April 2022, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions6-9april/Chile-Mexico.pdf.

78 "Panama's Proposals on the Revised Version of the Draft Political Declaration on EWIPA (REV 2 – 3 March 2022)", available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/submissions6-9april/Panama.pdf.

79 *Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences arising from the use of Explosive Weapons in Populated Areas: FINAL REV*, 25 May 2022, available at: www.dfa.ie/media/dfa/ourrolepolicies/peaceandsecurity/ewipa/EWIPA-Political-Declaration-Final-Rev-25052022.pdf.

80 See *Protection of Civilians in Armed Conflict: Report of the Secretary-General*, UN Doc. S/2019/373, 7 May 2019, para. 50; UN Doc. S/2020/366, 6 May 2020, paras 42–43; UN Doc. S/2021/423, 3 May 2021, paras 20–22; and UN Doc. S/2022/381, 10 May 2022, paras 30–31.

81 ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict*, Geneva, 2020 (ICRC Guidelines).

82 See above note 34.

83 UNGA Res. 77/104, 7 December 2022.

environment in the planning and conduct of those operations (paragraph 3.4), and second, in terms of collecting data on the direct and indirect effects of the use of explosive weapons in populated areas on the environment (paragraph 4.2). This would support improved understanding of the environmental impact of explosive weapons that could inform efforts to respond to and remediate that impact as well as help to identify lessons learned that could be applied in the planning and conduct of future operations in order to prevent or mitigate it.

The Political Declaration as a tool for strengthening the protection of the environment

Despite the lack of express references to the environment in the operative commitments, it is important for a number of reasons not to underestimate the Political Declaration's potential as a tool for strengthening the protection of the environment.

First, on a very practical level, if implemented effectively by endorser States, the Political Declaration should lead to reduced use of explosive weapons in populated areas in the future. Paragraph 3.3 expressly commits States to avoid civilian harm by "restricting or refraining, as appropriate, from the use of explosive weapons when their use may be expected to cause harm to civilians or civilian objects". To the extent to which this commitment leads to less use of explosive weapons in populated areas, it will, of course, lead to a corresponding decrease in the likelihood of damage to or destruction of the environment.

Second, in line with existing IHL, the Political Declaration draws a distinction between civilians and civilian objects on the one hand, and military objectives on the other. According to the ICRC, it is today generally recognized that, by default, the natural environment[84] is civilian in character – a recognition that is reflected in State practice, the ILC's work on the Draft Principles, and other important practice and scholarly work.[85] Thus, "all parts or elements of the natural environment are civilian objects, unless some become military objectives".[86] On this basis, it follows that the Declaration's references to "civilian objects" should be interpreted to include the environment. For example, the commitment in paragraph 3.3 to avoid civilian harm "by restricting or refraining

84 The ICRC Guidelines refer to the "natural environment". They observe that there are no agreed definitions of the terms "environment" or "natural environment" in international law and that for the purposes of the Guidelines, "natural environment" is understood "to constitute the natural world together with the system of inextricable interrelations between living organisms and their inanimate environment, in the widest sense possible". ICRC Guidelines, above note 82, p. 17. As noted above, during the consultations to develop the Political Declaration, a number of actors requested that references to the "natural environment" should refer only to the "environment". CEOBS, for example, noted that "[a]lthough the term natural environment is used in Additional Protocol I [to the Geneva Conventions], it is an artefact of the period of its development and does not reflect contemporary understanding of the relationship between people and the environment, nor of the value of the environment *per se*". CEOBS, above note 63.

85 ICRC Guidelines, above note 81, p. 19.

86 *Ibid.*, p. 20.

as appropriate from the use of explosive weapons when their use may be expected to cause harm to civilians or civilian objects" should be interpreted to include expected harm to the environment as a civilian object.

Third, it could additionally be argued that the inclusion of environmental impact among the different direct and indirect effects of explosive weapons elaborated in paragraphs 1.3–1.6 of the preamble – which are essentially a statement of the humanitarian consequences of explosive weapons use that the Political Declaration is seeking to address – requires that States and their armed forces consider environmental impact in their interpretation and implementation of a number of the Declaration's key operative commitments, in particular those contained in paragraphs 3.3, 3.4 and 4.2.

Implementing the commitment in paragraph 3.3 raises some important questions for endorser States and their armed forces, not least of all determining what is meant by, or what constitutes, "harm to civilians and civilian objects" in the context of paragraph 3.3. This is important as it is the expectation of such harm that marks the threshold at which militaries must choose to either restrict or refrain from the use of explosive weapons in populated areas. Of course, the actual types of harm that may be expected to result from the use of explosive weapons in populated areas will depend on the specific context in which the weapons are being used. As a general rule, however, it could be argued that the expectation of one or more of the direct and indirect effects elaborated in paragraphs 1.3–1.6 would be sufficient to require militaries to either restrict of refrain from the use of explosive weapons in populated areas.[87] By virtue of paragraph 1.5, this would necessarily include the likelihood of environmental harm – that is to say, endorser States should either restrict or refrain from any use of explosive weapons in populated areas that would be likely to impact the environment through the contamination of air, soil, water and other resources.

Paragraph 3.4 of the Political Declaration commits States to ensuring that their armed forces "take into account the direct and indirect effects on civilians and civilian objects which can reasonably be foreseen in the planning of military operations and the execution of attacks in populated areas". A key question for States and their armed forces in implementing this commitment is determining what direct and indirect effects "can reasonably be foreseen". Again, the preamble provides important guidance on this. The elaboration of direct and indirect or reverberating effects in paragraphs 1.3–1.6 reflects a substantial body of research that has documented such effects in recent armed conflicts in Afghanistan, Iraq, Libya, Syria, Yemen and elsewhere. As such, it is representative of the direct and indirect effects that "can reasonably be foreseen" to result from military operations in populated areas and which must, pursuant to paragraph 3.4, be taken into account – and mitigated against – in the planning and execution of

87 For a detailed discussion of the process of implementing paragraph 3.3 and determining when explosive weapons use may be expected to cause harm to civilians and civilian objects and, on that basis, whether to restrict or refrain from the use of explosive weapons in populated areas, see Simon Bagshaw, *Implementing the Political Declaration on the Use of Explosive Weapons in Populated Areas: Key Areas and Implementing Actions*, Article 36 Policy Briefing, November 2022.

such operations. As a result of paragraph 1.5, environmental harm would be among the direct and indirect effects that can reasonably be foreseen and that armed forces would need to take into account, pursuant to paragraph 3.4, in the planning of military operations and the execution of attacks in populated areas.

Paragraph 4.2 of the Political Declaration commits States to "[c]ollect, share, and make publicly available disaggregated data on the direct and indirect effects on civilians and civilian objects of military operations involving the use of explosive weapons in populated areas, where feasible and appropriate". The collection and sharing of such data is a critical function for a number of reasons, some of which are recognized in paragraph 1.8 of the preamble, which observes that

> improved data on civilian harm would help to inform policies designed to avoid, and in any event minimize, civilian harm; aid efforts to investigate harm to civilians; support efforts to determine or establish accountability, and enhance lessons learned processes in armed forces.

As noted, CEOBS and PAX had advocated for the inclusion of a specific reference to the environment in this paragraph on the grounds that "[i]mpact monitoring is critical to understand the environmental risks and damage caused by conflict"[88] – information that could be used to inform humanitarian and other response actions as well as military policies designed to avoid or minimize future such harm. Although no such reference to the environment was included in paragraph 4.2, once again, the inclusion of environmental harm among the direct and indirect effects of explosive weapons listed in paragraphs 1.3–1.6 of the Political Declaration would support its inclusion among the direct and indirect effects on which States have committed to collect, share and make publicly available disaggregated data, albeit where feasible and appropriate.[89]

Last but not least, reference should also be made to operative paragraph 3.5 of the Political Declaration, which commits States to "[e]nsure the marking, clearance, and removal or destruction of explosive remnants of war as soon as feasible after the end of active hostilities in accordance with [their] obligations under applicable international law, and support the provision of risk education". As noted earlier, concerns have been raised with regard to the polluting effects of ERW. Efforts under the Declaration to ensure the timely marking and, in particular, removal and destruction of ERW would assist with mitigating these concerns.[90]

A number of States have specific legal obligations relating to ERW clearance under the Convention on Cluster Munitions (CCM) and Protocol V to the Convention on Certain Conventional Weapons, and these are also alluded to

88 CEOBS, above note 16. See also R. Boer and W. Zwijnenburg, above note 30.

89 Support for such an interpretation can also be found in the ILC Draft Principles, above note 34. Specifically, Principle 23 stipulates that States and relevant international organizations shall share and grant access to relevant information in order to "facilitate measures to remediate harm to the environment resulting from an armed conflict".

90 Such efforts would also be consistent with the ILC Draft Principles, above note 34. Principle 26 states that parties to an armed conflict "shall seek, as soon as possible, to remove or render harmless toxic or other hazardous remnants of war under their jurisdiction or control that are causing or risk causing damage to the environment".

in paragraph 3.5 of the Political Declaration. In this regard, it should be noted that not all eighty-three States that have endorsed the Declaration are among the 94 States party to Protocol V[91] or the 111 States party to the CCM.[92] Thus, States that have remained outside of Protocol V and the CCM have committed through the Declaration, albeit in a political sense, to address the threat posed to civilians and the environment by ERW. This includes, in the case of Protocol V, Colombia, Indonesia, Kenya, Mexico, Serbia, Somalia, Turkey and the United Kingdom, and with regard to the CCM, Cambodia, Kuwait, Serbia, Turkey and the United States.

Conclusion

The Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from Use of Explosive Weapons in Populated Areas is, in many respects, a significant achievement – the first formal recognition at the international level of the severe short- and long-term harm resulting from the use of explosive weapons in populated areas. If fully and effectively implemented, the Declaration has the potential to make an important difference to the lives of conflict-affected populations, in particular by restricting the use of explosive weapons in populated areas and thereby reducing the harm to civilians and civilian objects that has been widely documented to result from such use.

The Political Declaration's treatment of the environment and its protection may have been the cause of disappointment in some quarters, but there is reason to believe that the Declaration can play an important role in future in strengthening the protection of the environment in armed conflict and from the use of explosive weapons in particular. This can be seen in terms of the extent to which its implementation leads to reduced reliance on and use of explosive weapons in populated areas, thereby reducing the likelihood of damage to the environment; in terms of interpreting the Declaration's references to civilian objects to include the environment; and in the inclusion of environmental impact among the direct and indirect effects arising from the use of explosive weapons, as articulated in paragraphs 1.3–1.6, placing environmental impact among the effects that States and their armed forces must consider when implementing their commitments in the Declaration. Lastly, the Declaration's provisions relating to the clearance or removal of ERW would also work to reduce their potential for polluting the environment.

It might reasonably be asked why it is important that the Political Declaration should be interpreted as also speaking to the protection of the

91 Protocol on Explosive Remnants of War (Protocol V) to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, 2399 UNTS 100, 28 November 2003 (entered into force 12 November 2006). A list of States Parties is available at: https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVI-2-d&chapter=26&clang=_en.

92 Convention on Cluster Munitions, 2688 UNTS 39, 30 May 2008 (entered into force 1 August 2010) (CCM). A list of States Parties is available at: https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVI-6&chapter=26&clang=_en.

environment – it could be argued, for example, that IHL already provides the environment with specific and general protection[93] and that what is required is more effective implementation of the existing law. How does the Political Declaration supplement or improve upon IHL as it relates to protection of the environment?

To begin with, the Declaration sets a lower threshold for environmental damage than that found in IHL. While the law prohibits "the use of methods or means of warfare that are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment",[94] the threshold for widespread, long-term and severe damage is very high: "The three conditions are cumulative and the phrase 'long-term' [is] understood … to mean decades."[95] The Declaration does not set such a high threshold. It refers more generally and without qualification to the "impact" of explosive weapons on the environment as among the direct and indirect effects against which endorser States have committed to strengthen the protection of civilians. The addition of such a commitment in the environmental sphere has the potential to strengthen the protection of the environment.

The extent to which that potential is realized will depend on the extent to which endorser States implement their commitments under the Political Declaration. Here, the Declaration's provision of a formal process of review may be advantageous. Paragraph 4.7 envisages regular meetings of endorser States (the first is expected to be convened in 2024) to review implementation of the Declaration, to exchange good policies and practices, and to share views on emerging concepts and terminology. In addition, paragraph 4.8 commits States to promoting the Declaration and pursuing its effective implementation by the greatest possible number of States, and to seeking adherence to its commitments by all parties to conflict, including non-State armed groups. Both paragraphs offer significant opportunities for interested States, the UN, the ICRC and civil society to advocate for and pursue strengthened protection of the environment in armed conflict. Again, the potential is there – what is needed, moving forward, is the will to realize it.

93 ICRC Guidelines, above note 81, p. 21.

94 Article 35(3) of Additional Protocol I prohibits the use of "methods or means of warfare which are intended, or may be expected to cause, widespread, long-term and severe damage to the natural environment". Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflict, 1125 UNTS 8, 8 June 1977 (entered into force 7 December 1978), Art. 35(3).

95 Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005, p. 151, available at: https://ihl-databases.icrc.org/en/customary-ihl/rules. The authors note that the Committee Established to Review the NATO Bombing Campaign against the Federal Republic of Yugoslavia stated in its final report in 2000 that the threshold was so high as to make it difficult to find a violation (p. 157).

International Review of the Red Cross (2023), **105** (924), 1313–1336.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000395

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War in cities: Why the protection of the natural environment matters even when fighting in urban areas, and what can be done to ensure protection

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Abstract

Around 50 million people across the world are affected by urban warfare. When conflict occurs in cities, the natural environment has historically been relegated to an afterthought, but both the immediate and long-term environmental consequences of urban warfare are serious. This article looks at actions that can be taken to protect the natural environment – and through this, the

† The authors would like to thank Vanessa Murphy and Laurent Gisel for their very helpful feedback on earlier drafts. Any errors are the authors' alone. This paper reflects the authors' views and not any institutional position/s.

The advice, opinions and statements contained in this article are those of the author/s and do not necessarily reflect the views of the ICRC. The ICRC does not necessarily represent or endorse the accuracy or reliability of any advice, opinion, statement or other information provided in this article.

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population – against the effects of urban warfare when fighting in urban areas. It is intended to be a part of the conversation about what parties to armed conflict can and should do to give effect to their legal obligations under international humanitarian law and international law more broadly, with a specific focus on the natural environment when fighting in urban areas.

Keywords: war in cities, urban warfare, natural environment, essential infrastructure, IHL.

Introduction

Urban warfare[1] is not a new phenomenon. It has long presented us with devastating humanitarian consequences, including high numbers of civilian deaths and injuries, and the destruction of civilian livelihoods, homes and critical infrastructure. Today more than 50 million people across the world are affected by urban warfare,[2] and the consequences are extensive and varied. When war occurs in cities, the natural environment has historically been relegated to an afterthought, but both the immediate and long-term environmental consequences of urban warfare are too serious not to be taken into consideration before the end of hostilities. These consequences impact the delivery of essential services to civilians, their health, their ability to carry out their livelihoods and their ability to exercise freedom of movement. These effects continue to be felt after active hostilities have ended.[3]

This article begins by identifying the different ways in which hostilities waged within or on the outskirts of cities may impact the natural environment. It then sets out the relevant international humanitarian law (IHL), as well as other international legal frameworks which provide protection for the natural environment against the effects of urban warfare. The article goes on to look at actions that can be taken to protect the natural environment in urban areas, and through this, the population, against the effects of urban warfare. It is intended to be a part of the conversation about what parties to armed conflict can and should do to give effect to their legal obligations under IHL, and international law more broadly, with a specific focus on the protection of the natural environment when fighting occurs in urban areas.

1 The term "urban warfare" is understood to refer to "hostilities in an urban setting (which can take many forms, including ground troop/force manoeuvres and fighting, indirect fire, aerial bombardment, and/or asymmetric warfare), and other military operations affecting urban setting (such as a siege or some other form of encirclement, or damage to infrastructure in countryside that affects delivery of services in an urban setting)": ICRC, *Present and Engaged: How the ICRC Responds to Armed Conflict and Violence in Cities*, Geneva, 2022, p. 17.

2 ICRC, *Waging War in Cities: A Deadly Choice*, Geneva, 2020; United Nations (UN), "Urban Warfare Devastates 50 Million People Worldwide, Speakers Tell Security Council, Calling for Effective Tools to End Impunity, Improve Humanitarian Response", 25 January 2022, available at: https://press.un.org/en/2022/sc14775.doc.htm.

3 ICRC, above note 1, p. 17.

By way of an introductory point, it is noted that there is variation in terminology used in legal instruments on the protection of the environment in armed conflicts. Some instruments either do not define environment at all or include definitions that are for the purposes of a specific text only.[4] For the purposes of considering the impact of urban warfare on the environment, and in line with the view of the International Committee of the Red Cross (ICRC), the "natural environment" – the term generally used in IHL and in particular in Additional Protocol I to the Geneva Conventions (AP I)[5] – is understood in this article to constitute "the natural world together with the system of inextricable interrelations between living organisms and their inanimate environment, in the widest sense possible". This includes "everything that exists or occurs naturally" and natural elements that "may be the product of human intervention", including, *inter alia*, agricultural areas, drinking water and livestock.[6]

Impact of urban warfare on the natural environment

The world continues to urbanize, with about 68% of the global population expected to live in the planet's rapidly expanding urban areas in 2050.[7] This trend, together with the international community's concern about degradation of the natural environment and climate change, has led to an increased attention in recent years on the interdependency between urban areas (which have been found to be more affected by climate change than more rural areas[8]) and the natural environment (which, particularly thorough providing safe water and clean air, is a known determinant of human health[9]). Armed conflicts today continue to cause

4 See, e.g., Marja Lehto, *Second Report on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/728, 27 March 2019, para. 186; ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict*, Geneva, 2020 (ICRC Guidelines), p. 15; Program on Humanitarian Policy and conflict Research at Harvard University, *HPCR Manual on International Law Applicable to Air and Missile Warfare*, Cambridge University Press, Cambridge, 2013, Rule 87, para. 6. See also Philippe Sands and Jacqueline Peel with Adriana Fabra and Ruth MacKenzie, *Principles of International Environmental Law*, 4th ed., Cambridge University Press, Cambridge, 2018, p. 14.

5 See e.g. Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I), Article 35.

6 ICRC Guidelines, above note 4, para. 16 and references therein.

7 UN Habitat, *World Cities Report 2022: Envisaging the Future of Cities*, Nairobi, 2022, p. 4; UN, Department of Economic and Social Affairs, Population Division, *World Urbanization Prospects 2018: Highlights*, UN Doc. ST/ESA/SER.A/421, 2019.

8 Geneva Environment Network, "Update: Cities and the Environment", 13 January 2023, available at: www.genevaenvironmentnetwork.org/resources/updates/cities-and-the-environment/#scroll-nav__4; Anne D. Guerry *et al.*, *Urban Nature and Biodiversity for Cities*, Global Platform for Sustainable Cities Policy Brief, World Bank, Washington, DC, 2021, p. 4; Hans-Otto Pörtner *et al.* (eds), "Summary for Policy Makers", in Hans-Otto Pörtner *et al.* (eds), *Climate Change 2022: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge and New York, 2022, p. 11, para. B.1.5, available at: www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf.

9 Article 36, *Health and Harm: Protecting Civilians and Protecting Health*, August 2020, p. 9, available at: https://article36.org/wp-content/uploads/2020/08/A36-protecting-health.pdf.

degradation and destruction of the natural environment. The harm caused to the natural environment by armed conflict may be direct or indirect: the natural environment may be directly targeted, suffer incidental damage – including as a result of damage being caused to the built environment – or be impacted by the indirect effects of armed conflicts, such as the collapse of governance or infrastructure. Harm caused to the natural environment during urban warfare may, in turn, affect the well-being and health of local populations, sometimes long after the conflict has ended.[10]

When it comes to biodiversity, a variety of species live within city boundaries.[11] Urban nature and biodiversity provide a multitude of services to people which are commonly referred to as "ecosystem services". These ecosystem services have provisioning (e.g. they provide city residents with food – such as inhabitants growing food[12] – and clean water – such as watersheds located in urban areas[13]), regulating (e.g., they can provide flood control to a city or filter the air), cultural (e.g. recreation, such as parks and forests) and supportive (e.g. nutrient cycling) characters.[14] To function properly, cities need healthy ecosystems and rich biodiversity. Nature and biodiversity outside of cities also provide crucial services to those residing within cities – for instance, providing resources such as water and food.[15]

Cities are not all the same. There will be great variety in the impacts of urban warfare on the natural environment in and outside of cities depending on each city's location, and on natural and man-made features and key purposes, including industries. One common feature, however, is that cities by their nature contain buildings, whose destruction results in rubble, and within those buildings, potentially toxic or hazardous substances may be present. This is particularly the case where residential areas overlap with industrial, commercial or energy infrastructure. Further, cities are critically dependent on water and sanitation infrastructure to ensure proper health. The consequences of damage caused to water infrastructure, including the water source itself, are more severe in urban contexts than in rural areas because of the "complexity of water infrastructure, its

10 ICRC Guidelines, above note 4, paras 1–2.

11 See, further, A. D. Guerry *et al.*, above note 8.

12 Daniel. R. Richards and Benjamin. S. Thompson, "Urban Ecosystems: A New Frontier for Payments for Ecosystem Services", *People and Nature*, Vol. 1, No. 2, 2019.

13 For instance, the New York City Watershed provides approximately 1.3 billion gallons of clean drinking water to roughly 9 million people every day, and the Omerli Watershed, outside of Istanbul, provides drinking water to Istanbul: Erik Gomez-Baggethun *et al.*, "Urban Ecosystem Services", in Thomas Elmqvist *et al.* (eds), *Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities*, Springer, Dordrecht, 2013.

14 UN Environment Programme (UNEP), "Cities: Biodiversity and Ecosystems", available at: www.unep.org/explore-topics/resource-efficiency/what-we-do/cities/biodiversity-and-ecosystems. See also Food and Agriculture Organisation, "Background: Ecosystem Services and Biodiversity", available at: www.fao.org/ecosystem-services-biodiversity/background/en/. For more on ecosystem services and warfare, see Robert A. Francis and Krishna Krishnamurthy, "Human Conflict and Ecosystem Services: Finding the Environmental Price of Warfare", *International Affairs*, Vol. 90, No. 4, 2014.

15 A. D. Guerry *et al.*, above note 8.

interconnectedness with other infrastructure and the density of the population depending on it".[16]

There are different ways in which hostilities waged within or on the outskirts of cities may impact the natural environment. (Even though this section will focus on environmental impacts occurring within cities, it is important to note that such impacts may extend beyond cities – for instance, toxic substances released by explosive weapons used in populated areas can seep into the soil, subsoil and watercourses and continue spreading away from the populated area, poisoning flora and fauna.[17]) First, the natural environment may be directly damaged by the immediate conduct of hostilities, for instance with vegetation being destroyed by bombardments.[18] Second, weapons including explosives used during hostilities in urban environments contain toxic chemicals constituents harmful to humans and the natural environment. Leaks from unexploded ordnance or heavy metals from munitions may leave toxic or other hazardous remnants of war.[19] These substances can seep into the soil, subsoil and watercourses and contaminate the flora and fauna, including by spreading away from urban areas.[20] This can have a severe impact on the health of local populations and on ecosystems.[21]

Third, hostilities in urban environments generate considerable amounts of debris and rubble that may contain hazardous substances. For instance, it has been estimated that 55 million tons of conflict debris was generated in Iraq during the 2014–17 period of the ISIL conflict, along with 15 million tons in Aleppo and 5.3 million in Homs in Syria.[22] Such large amounts of debris have caused repeated

16 Mara Tignino and Oeykue Irmakkesen Westendorff, *The Geneva List of Principles on the Protection of Water Infrastructure*, Brill, Leiden, 2020; ICRC, *Urban Services during Protracted Armed Conflict: A Call for a Better Approach to Assisting Affected People*, Geneva, 2015.

17 ICRC, *Explosive Weapons with Wide Area Effects: A Deadly Choice in Populated Areas*, Geneva, January 2022 (ICRC EWIPA Report), p. 59.

18 Michael J. Lawrence, Holly L. J. Stemberger, Aaron J. Zolderdo, Daniel P. Struthers and Steven J. Cooke, "The Effects of Modern War and Military Activities on Biodiversity and the Environment", *Environmental Reviews*, Vol. 23, No. 4, 2015.

19 Terminology used in International Law Commission (ILC), *Principles on Protection of the Environment in Relation to Armed Conflicts*, UNGA Res. 77/104, 7 December 2022 (PERAC Principles), Principle 26. These may consist of explosive remnants of war but also of other hazardous material and objects: *ibid.*, commentary on Principle 26, para. 2.

20 ICRC EWIPA Report, above note 17, p. 59; Geneva International Centre for Humanitarian Demining, "'Do No Harm' and Mine Action: Protecting the Environment while Removing the Remnants of Conflict", 2014, available at: www.gichd.org/publications-resources/publications/do-no-harm-and-mine-action-protecting-the-environment-while-removing-the-remnants-of-conflict/.

21 Aneaka Kellay, "Pollution Politics: Power, accountability and toxic remnants of war", Toxic Remnants of War Project, Conflict and Environment Observatory (CEOBS), 24 November 2014, available at: https://ceobs.org/pollution-politics-power-accountability-and-toxic-remnants-of-war/#easy-footnote-bottom-12-373; PAX, *Amidst the Debris: A Desktop Study on the Environmental and Public Health Impact of Syria's Conflict*, 2015, p. 57, available at: https://paxforpeace.nl/wp-content/uploads/sites/2/import/import/pax-report-amidst-the-debris-syria-web.pdf; M. J. Lawrence *et al.*, above note 18.

22 UNEP, "Environmental Legacy of Explosive Weapons in Populated Areas", 5 November 2021, available at: www.unep.org/news-and-stories/story/environmental-legacy-explosive-weapons-populated-areas; UNEP, *Technical Note: Environmental Issues in Areas Retaken from ISIL, Mosul, Iraq*, 2017, p. 2, available at: www.unep.org/resources/publication/environmental-issues-areas-retaken-isil-mosul-iraq-technical-note.

concerns for the natural environmental and the health of local populations.[23] The issue of asbestos in the Ukrainian built environment has also been recently flagged as creating "millions of tons of highly hazardous, asbestos-contaminated rubble".[24] Demolition waste may be contaminated by toxic substances from weapons residues (see above), harmful household chemicals, medical waste and building materials (such as asbestos), thereby posing a risk to the natural environment and civilian health.[25] Fires caused by bombardment can also release polynuclear aromatic hydrocarbons, highly toxic chlorinated compounds, dioxins or furans.[26] Post-conflict management of toxic debris and rubble may also cause major environmental problems.[27]

Fourth, "facilities containing pollutants such as toxic chemicals, biological agents and radiological substances are often located on the outskirts or in the vicinity of major urban centres".[28] When industrial infrastructure is impacted during armed conflict, facilities containing pollutants risk being incidentally damaged or not being properly managed due to the hostilities.[29] When such facilities are damaged, pollutants risk being released, contaminating the air, water and soil and thereby affecting the natural environment and civilian health.[30] These hazardous materials can also cause significant secondary explosions or large fires that further spread contaminants.[31] In 1999, during the Kosovo armed conflict, the NATO coalition air strikes damaged oil refineries and depots in Pančevo, a town of around 80,000 inhabitants located near Belgrade next to the Danube River. This resulted in widespread environmental damage and serious consequences for the civilian population in the affected area and downstream, who inhaled poisoned air and had toxic water and soil to

23 See e.g. UN Security Council, *Protection of Civilians in Armed Conflict: Report of the Secretary-General*, UN Doc. S/2019/373, 7 May 2019, para. 50; PAX, above note 21, p. 40; UNEP, *Environmental Assessment of the Gaza Strip following the escalation of hostilities in December 2008–January 2009*, 2009, pp. 27–29; Roos Boer and Wim Zwijnenburg, "Exploring the Links between Environmental Harm and the Use of Explosive Weapons in Populated Areas", *INEW*, available at: www.inew.org/exploring-the-links-between-environmental-harm-and-the-use-of-explosive-weapons/. See also Okechukwu Ibeanu, *Adverse Effects of the Illicit Movement and Dumping of Toxic and Dangerous Products and Wastes on the Enjoyment of Human Rights: Report of the Special Rapporteur*, UN Doc. A/HRC/5/5, 5 May 2007, para. 21.

24 Olivia Nielsen and Dave Hodgkin, "Rebuilding Ukraine: The Imminent Risks from Asbestos", *PreventionWeb*, 7 June 2022, available at: www.preventionweb.net/blog/rebuilding-ukraine-imminent-risks-asbestos.

25 A. Kellay, above note 21; see also e.g. UNEP, *Lebanon: Post-Conflict Environmental Assessment*, 2007, p. 89.

26 A. Kellay, above note 21; UNEP, above note 23, pp. 27–29

27 See e.g. UNEP, above note 25, p. 88

28 ICRC EWIPA Report, above note 17, p. 60.

29 Doug Weir, "Collateral Damage Estimates of the Acceptability of Attacks on Industrial Sites", CEOBS, 2015, available at: https://ceobs.org/collateral-damage-estimates-and-the-acceptability-of-attacks-on-industrial-sites/; UNEP, above note 23, pp. 27–29.

30 UNEP, "Environmental Legacy", above note 22; UN Security Council, *Protection of Civilians in Armed Conflict: Report of the Secretary-General*, UN Doc. S/2019/373, 7 May 2019, para. 50; UN Security Council, *Protection of Civilians in Armed Conflict: Report of the Secretary-General*, UN Doc. S/2022/381, 10 May 2022, para. 30.

31 ICRC EWIPA Report, above note 17, p. 60.

contend with.[32] In 2017, shelling hit a building which stored over 7,000 kilograms of chlorine gas in Ukraine.[33] While no storage container was damaged, experts stated that the rupture of just one 900-kilogram container would kill anyone within 200 metres and result in severe health consequences for those within 2.4 kilometres.[34]

Fifth, the destruction of electrical infrastructure can also have severe consequences. During the conflict in Serbia, 150 tons of pyralene transformer oils were released from a damaged station in Belgrade and leaked through a canal system, reaching local streams and rivers.[35] It is estimated that only one litre of the pyralene – a polychlorinated biphenyl, exposure to which can have severe adverse health effects – can pollute a billion litres of water.[36] Damage to electrical infrastructure can also disrupt sewage or wastewater treatment systems relying on electricity, harming the quality of the water and soil by polluting them with untreated wastewater.[37] Wastewater and sewage spills may have serious environmental consequences, leading to the contamination or interruption of safe drinking water supply and/or to the loss of safe disposal and treatment of sewage and other urban wastewater.[38] Furthermore, contamination of underground water systems may in turn contaminate natural water sources in other locations – with effects spreading beyond cities.

Sixth, armed conflicts in urban environments may also disrupt solid waste management services. For instance, during the armed conflict in Syria, the system of waste management was severely disrupted. This led to an accumulation of municipal waste and to an increase in uncontrolled dumping and burning, creating "immediate and long-term health and environmental risks".[39]

Finally, indirect environmental impacts of armed conflicts on cities can result from population movements. Armed conflicts may lead to urban population growth, with people being driven away from their homes in rural areas and toward the city. People may be forced to flee the city following damage to or destruction of urban structures or services, and cities may also become a refuge for people fleeing from fighting.[40] Such population movements may have

32 "Serbian Town Bombed by NATO Fears Effects of Toxic Chemicals", *New York Times*, 14 July 1999, available at: www.nytimes.com/1999/07/14/world/serbian-town-bombed-by-nato-fears-effects-of-toxic-chemicals.html; UNEP, *The Kosovo Conflict: Consequences for the Environment and Human Settlements*, 31 December 1999, available at: www.unep.org/resources/assessment/kosovo-conflict-consequences-environment-and-human-settlements.

33 Office of the UN High Commissioner for Human Rights, "Chemical Disaster Fear in Eastern Ukraine Prompts UN Expert to Raise Alarm", 10 March 2017, available at: www.ohchr.org/en/press-releases/2017/03/chemical-disaster-fear-eastern-ukraine-prompts-un-expert-raise-alarm?LangID=E&NewsID=21344.

34 *Ibid.*

35 Regional Environmental Center for Central and Eastern Europe, *Assessment of the Environmental Impact of Military Activities during the Yugoslavia Conflict*, 30 June 1999, p. 13.

36 *Ibid.*

37 One example of this is in Gaza: see UNEP, above note 23, p. 39; PAX, above note 21, p. 29.

38 UNEP, above note 25, 2007, pp. 91, 117.

39 PAX, above note 21, p. 29; UNEP, above note 23, pp. 44–45.

40 Peter Maurer, "Wars in Cities: Protection of Civilians in Urban Settings", speech given to the ICRC, UN Security Council Open Debate, 25 January 2022, available at: www.icrc.org/en/document/wars-cities-protection-civilians-urban-settings.

negative environmental impacts, which may be more severe if people travel through or move to particularly fragile natural environments. Displacement in urban contexts can "exacerbate pre-existing problems", including waste management,[41] which may, in turn, have consequences for the natural environment. For instance, it was reported that the population of Abidjan, in Côte d'Ivoire, doubled during the decade of internal conflict following the military coup in 1999.[42] In parallel, however, investment in critical infrastructure – notably, water and wastewater management facilities – did not catch up because of the conflict, which led to major environmental issues in the city.[43] The impact of population movements in a city may also depend on the parts of the city that the newcomers settle in. For example, in the city of Maiduguri in Nigeria, in the inner areas of the city the increasing population affected primarily the urban poor, whereas in the outskirts of the city "the presence of [a large group of] displaced persons was leading to environmental degradation".[44] While in Maiduguri people fled an armed conflict from rural areas to the city,[45] fleeing urban warfare from one city to another similarly causes pressure following population growth, and movement within the city puts strain on certain neighbourhoods.[46]

Additionally, the impacts of displacement from cities are strongly felt on the natural environment outside cities as displacement causes communities to deplete and damage resources in areas that are ill-equipped to house large numbers of people. The breakdown of environmental governance within cities, another possible indirect impact of armed conflict, may also result in a lesser capacity to address the environmental harm arising from the hostilities and to ensure the continued management and conservation of the urban environment.[47]

The legal framework

The examples shared above demonstrate how environmental destruction or contamination in urban areas, and the collapse of urban environmental systems, can quickly have far-reaching impacts for civilians. This is notably because of the population density and interconnectedness of services in urban areas. In this part of the article, we will look at the specific protections under IHL for the natural environment, the protection of the natural environment as a civilian object, the

41 ICRC, *Displaced in Cities: Experiencing and Responding to Urban Internal Displacement Outside Camps*, Geneva, 2020, p. 29.
42 UNEP, *Côte d'Ivoire: Post-Conflict Environmental Assessment*, 2015, pp. 8, 9.
43 *Ibid.*
44 ICRC, above note 41, p. 29.
45 *Ibid.*, p. 20.
46 *Ibid.*, p. 29.
47 For instance, UNEP has reported on how the functioning of the key Palestinian institutions dealing with environmental issues in the Gaza Strip was hampered due to the escalation of hostilities in December 2008 and January 2009, notably due to direct physical damages suffered and "the mobility of staff from all institutions [being] restricted through the period, limiting their ability to effectively respond to urgent environmental problems that arose during the hostilities": UNEP, above note 23, p. 68. See also UNEP, *Technical Note*, above note 22, pp. 19–20.

rules on the means and methods of warfare and what they mean for the protection of the natural environment, and other relevant provisions in international law.

In recent years, increased attention has been paid to the environmental impact of the conduct of hostilities. This increased attention is visible in the achievement of the International Law Commission (ILC) Principles on Protection of the Environment in Relation to Armed Conflicts (PERAC Principles).[48] The PERAC Principles codify existing law, including aspects of international environmental law, and also contain progressive developments in line with the mandate of the ILC.[49] In complement to the work of the ILC and focused more narrowly on the relevant rules of IHL, the ICRC also released its updated *Guidelines on the Protection of the Natural Environment in Armed Conflict* (ICRC Guidelines) to provide clarity as to how the existing rules of IHL protect the natural environment, guidance as to their interpretation, and support for their dissemination.[50] The focus here will be on those rules which have particular relevance in urban settings. This will inform the discussion later in the article about what practical measures States and parties to armed conflict can take to protect the natural environment in urban settings.

Specific protection of the natural environment

IHL includes specific provisions that protect the natural environment in armed conflict. These provisions were adopted as a reaction to environmental damage in armed conflicts in the 1970s, in particular the Vietnam War, and were first codified in AP I. Most prominently, in AP I, the specific protection of the natural environment is encapsulated in two articles: Article 35(3) and Article 55. Article 35(3) protects the natural environment from methods or means of warfare which are intended, or may be expected, to cause "widespread, long-term and severe damage" to the natural environment itself. Article 55 prohibits use of such means and methods of warfare "which are intended or may be expected to cause [widespread, long-term and severe] damage to the natural environment and thereby to prejudice the health or survival of the population". In addition, Article 55 prohibits reprisals against the natural environment.[51] These obligations are reflected in both the ICRC Guidelines and the PERAC Principles.[52] Moreover,

48 PERAC Principles, above note 19. The Draft Principles on Protection of the Environment in Relation to Armed Conflicts were adopted by the ILC at its 73rd Session in 2022, and submitted to the UN General Assembly as a part of the Commission's report covering the work of that session: UN Doc. A/77/10, 2022, p. 92, para. 58. The Commission's report "takes note" of the principles and "encourages their widest possible dissemination".

49 See ILC, *Protection of the Environment in Relation to Armed Conflicts: Comments and Observations Received from Governments, International Organizations and Others*, UN Doc. A/CN.4/749, 17 January 2022.

50 ICRC Guidelines, above note 4, paras 9–13 (updated in 2020 from the earlier 1994 articulation).

51 AP I, Arts 35(3), 55. See also PERAC Principles, above note 19, Principles 13, 15; ICRC Guidelines, above note 4, Rules 2, 4; Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), Rule 45, available at: https://ihl-databases.icrc.org/en/customary-ihl/v1.

52 PERAC Principles, above note 19, Principle 13; ICRC Guidelines, above note 4, Rules 2–3.

specific provisions for protecting the natural environment in armed conflict have crystallized into customary IHL. As identified by Rules 44 and 45 of the ICRC Customary Law Study, methods and means of warfare must be employed with due regard to the protection and preservation of the natural environment,[53] and it is prohibited to use means or methods of warfare intended or expected to cause widespread, long-term and severe damage to the natural environment.[54]

The cumulative conditions of "widespread, long-term and severe damage" in the case of AP I and customary law[55] are worth examining in light of the specificities of urban contexts to determine whether they could be met by environmental damage caused by urban warfare. In the view of the ICRC, as set out in its Guidelines, "widespread" should be understood to refer to an area of "several hundred square kilometres",[56] "long-term" covers damage with impacts lasting in the range of years (possibly a scale of ten to thirty years),[57] and "severe" should be understood to cover disruption or damage to an ecosystem or harm to the health or survival of the population on a large scale.[58] Analysis of these terms should today take into account not only direct effects but also "cumulative and indirect (or reverberating) effects" and, for example, the persistence of substances in the natural environment.[59]

For example, as explained above, the interconnectedness of water systems can spread any damage to the natural environment in an urban environment over a wide area. As the examples given above show, such pollution of water systems can, *inter alia*, be caused by damage to oil refineries or to vessels docked in ports and which contain poisonous substances, or by damage to wastewater purification systems or to power plants running these systems. The interconnectedness of water systems, and the very nature of water flows, will then spread the damage to a wide area, potentially outside of the city, even if the

53 ICRC Customary Law Study, above note 51, Rule 4; ICRC Guidelines, above note 4, Rule 1.

54 ICRC Customary Law Study, above note 51, Rule 45; ICRC Guidelines, above note 4, Rule 2.

55 While the provisions of AP I are applicable in international armed conflict only, it has been considered that the prohibition against causing widespread, long-term and severe damage to the natural environment arguably also applies in non-international armed conflicts following the customary nature of these provisions. See ICRC Customary Law Study, above note 51, Rule 45 (first sentence), p. 151; ICRC Guidelines, above note 4, Rule 2 and para. 47. It should be noted that some States are persistent objectors to the customary nature of this rule.

56 ICRC Guidelines, above note 4, Rule 2, paras 56–60.

57 Yves Sandoz, Christophe Swinarski and Bruno Zimmermann (eds), *Commentary on the Additional Protocols*, ICRC, Geneva, 1987 (ICRC Commentary on the APs), pp. 415–416, para. 1452; ICRC Guidelines, above note 4, Rule 2, paras 61–66.

58 As with "widespread", the term "severe" is not discussed in the *travaux préparatoires* of AP I. The term "severe" is used in the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, 1108 UNTS 151, 18 May 1977 (ENMOD Convention). The ENMOD Convention prohibits the "use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party" (Art. I). Environmental modification refers to the deliberate manipulation of natural processes such as causing earthquakes, tsunamis, an upset in the ecological balance of a region, or changes in weather patterns (Art. II and Understanding Relating to Art. II). Although this is not directly transferable, the reference to "upset in the ecological balance" does give some indication as to what would be encapsulated by "severe". See also ICRC Guidelines, above note 4, Rule 2, paras 67–72.

59 ICRC Guidelines, above note 4, paras 62–66.

immediate damage itself may have occurred in a relatively restricted area. Furthermore, such damage can be long-term, as it can contaminate the soil and natural water sources. The clean-up process may be difficult, if not impossible, complicated possibly by the prolonged armed conflict. Finally, as the examples presented above show, the consequences of environmental damage in the context of urban warfare can be severe, damaging the health of, and possibly even killing, members of the population coming into contact with the pollution. In the case of water systems, the interconnectedness of urban infrastructure means that the impact of the damage to an ecosystem on which the water system relies for a source of water could be more severe than in more rural areas. As the interconnectedness of urban infrastructure is foreseeable to some degree, this must be taken into account.

Having discussed the conditions of damage to the natural environment under IHL in an urban context, it is to be recognized that fulfilling these conditions in the city context *stricto sensu*, in particular with regard to "widespread" damage that is required to be "several hundred square kilometres" in area, can be difficult. It has been argued that the rules of IHL are inadequate because the "widespread" requirement would exceed "the actual territories of the absolute majority of the cities in the world".[60] While recognizing that this is likely to be true in many cases, this view does not take into account the interconnectedness described above, and the fact that damage could spread beyond city boundaries and therefore fulfil this condition. Given this, there could be circumstances where damage to the natural environment caused by urban fighting is widespread, long-term and severe.

The civilian character of the natural environment

In addition to specific rules designed to protect it, the natural environment is protected by virtue of its civilian character.[61] It is generally recognized today that, by default, the natural environment is civilian in character,[62] and all parts of the natural environment are civilian objects, unless they have become military objectives.[63] Thus the principles of IHL relevant to civilian objects protect all parts of the natural environment unless they become military objectives

60 Nikoloz Mosidze, "Urban Natural Environment: Yet Another Vulnerable Victim of Wars in Cities", *International Law Blog*, 26 June 2023, available at: https://internationallaw.blog/2023/06/26/urban-natural-environment-yet-another-vulnerable-victim-of-wars-in-cities/.

61 It is to be noted that over time, there have been differing views on whether the natural environment should be seen as a civilian object. For discussion, see Cordula Droege and Marie-Louise Tougas, "The Protection of the Natural Environment in Armed Conflict – Existing Rules and Need for Further Legal Protection", in Rosemary Rayfure (ed.), *War and the Environment: New Approaches to Protecting the Environment in Armed Conflict*, Brill, Leiden, 2014, pp. 15–17.

62 ICRC Guidelines, above note 4, para. 18 fn. 32–35; PERAC Principles, above note 19, Principle 13. For discussion on diverging views on the civilian character of the natural environment, see ICRC Guidelines, above note 4, fn. 32.

63 ICRC Guidelines, above note 4, para. 21.

according to the ordinary rules.[64] The principle of distinction[65] means that attacks directed at any part of the natural environment are prohibited, unless and for such time as that part becomes a military objective.[66] In addition, indiscriminate attacks – meaning attacks that "are not directed at a specific military objective", that "employ a method or means of combat which cannot be directed at a specific military objective" or that "employ a method or means of combat the effects of which cannot be limited as required" by IHL and therefore do not conform the principle of distinction – are prohibited.[67] Furthermore, when attacks against military objectives are expected to cause incidental damage to the natural environment, the additional core principles of IHL,[68] the principles of proportionality[69] and precaution (both in attack and against the effects of attacks),[70] are to be complied with.[71]

The principle of proportionality means that launching attacks against a military objective that "may be expected to cause incidental damage to the natural environment which would be excessive in relation to the concrete and

64 PERAC Principles, above note 19, Principles 13–14; ICRC Guidelines, above note 4, Rules 5–9. See also International Court of Justice (ICJ), *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, *ICJ Reports 1996* (Nuclear Weapons Advisory Opinion), p. 226, para. 30; C. Droege and M.-L. Tougas, above note 61, pp. 13–14.

65 On the principle of distinction with regard to international armed conflicts, see AP I, Arts 48, 52. With regard to non-international armed conflicts, the principle is not explicitly included in Additional Protocol II. It can, however, be found in other conventions and is considered by the ICRC to form a rule of customary IHL. See two protocols of the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects (and Protocols), 1341 UNTS 137, 10 October 1980 (amended 21 December 2001) (CCW): Protocol (II) on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices, 3 May 1996 (entered into force 3 December 1998), Art. 3(7); and Protocol (III) on Prohibitions or Restrictions on the Use of Incendiary Weapons, 10 October 1980 (entered into force 2 December 1983) (CCW Protocol III), Art. 2(1). See also ICRC Customary Law Study, above note 51, Rule 1.

66 PERAC Principles, above note 19, Principle 13(3); ICRC Guidelines, above note 4, Rule 5 (see also Rule 6 prohibiting indiscriminate attacks); C. Droege and M.-L. Tougas, above note 61, p. 17.

67 AP I, Art. 51(4); ICRC Customary Law Study, above note 51, Rules 11–12.

68 It is to be noted that as the principles of precaution and proportionality are discussed here, what is meant by them are the specific definitions found in IHL. These terms are also found in international environmental law. As Stefanik has noted, while precaution in IHL and international environmental law have shared elements, in particular the aim of protecting entities from excessive damage, they also differ significantly. In international environmental law, the precautionary principle essentially means abstaining from causing "significant harm to the environment" even in cases in which there is no scientific certainty of such harm occurring. Similarly, proportionality in international environmental law means that responses taken to prevent harm to the environment should be proportionate to the perceived risk. Kirsten Stefanik, "The Environment and Armed Conflict: Employing General Principles to Protect the Environment", in Carsten Stahn, Jens Iverson and Jennifer S. Easterday (eds), *Environmental Protection and Transitions from Conflict to Peace*, Oxford University Press, Oxford, 2017, pp. 106, 113.

69 AP I, Art. 51(1)(b). For analysis and practice on the principle of proportionality as customary law, see ICRC Customary Law Study, above note 51, Rule 14 and related practice.

70 AP I, Arts 57, 58. For analysis and practice on the principle of precaution as customary law, see ICRC Customary Law Study, above note 51, Rules 15–24 and related practice.

71 See also Karen Hulme, "Taking Care to Protect the Environment against Damage: A Meaningless Obligation?", *International Review of the Red Cross*, Vol. 92, No, 879, 2010, p. 678.

direct military advantage anticipated is prohibited".[72] In addition to the principle of proportionality, in line with the protection of civilians and civilian objects, parties to an armed conflict must take constant care in the conduct of military operations "to spare the civilian population, civilians and civilian objects" from the effects of attacks and must therefore take all feasible precautions "in the choice of means and methods of attack with a view to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects",[73] including to the natural environment.[74] The precautions are not limited to the attacking party, but the parties to the conflict must also take "all feasible precautions" to protect all parts of the natural environment that are civilian object under their control.[75] The ICRC Guidelines note that the feasible precautions "in given circumstances will therefore be highly fact specific" and

> may vary depending on factors such as the military advantage sought by the operation, whether it is time sensitive, the terrain (whether man-made or natural), the situation and capabilities of the parties to the conflict, the resources, methods and means available, and the type, likelihood and severity of the expected incidental civilian harm, including harm to the natural environment.[76]

The ICRC Guidelines further note that with regard to this latter aspect, elements to be taken into account when assessing the feasibility of a precaution include "the area expected to be affected and the scope of those effects, the fragility or vulnerability of the natural environment in that area, the expected severity of the damage and the expected duration of damage".[77]

The principles of proportionality and precaution are particularly relevant in densely populated areas. However, when fighting in populated areas, taking the natural environment into account when applying these principles is perhaps a less obvious consideration for those planning and making decisions on military operations, and for military targeteers. In urban areas, military and civilian objects are often "intermingled" and civilian objects may be damaged despite not being directly targeted.[78] Where such damage is excessive in relation to the military advantage anticipated, such an attack would be unlawful. Military targeting

72 ICRC Customary Law Study, above note 51, Rule 43(C); ICRC Guidelines, above note 4, Rule 7; C. Droege and M.-L. Tougas, above note 61, p. 19. See also Louise Doswald-Beck (ed.), *San Remo Manual on International Law Applicable to Armed Conflicts at Sea*, 12 June 1994, para. 13(c); ICRC Guidelines, above note 4, Rule 7, para. 115. See also Nuclear Weapons Advisory Opinion, above note 64, where the ICJ confirmed that "environmental considerations" are part of the assessment that States must take into account when they consider "what is necessary and proportionate in the pursuit of legitimate military objectives".

73 AP I, Art. 57; ICRC Customary Law Study, above note 51, Rule 15; ICRC Guidelines, above note 4, Rules 8, 9.

74 ICRC Guidelines, above note 4, Rules 8, 9.

75 See AP I, Art. 58(c) regarding "civilian objects"; and ICRC Guidelines, above note 4, Rule 9 for greater detail regarding the natural environment.

76 ICRC Guidelines, above note 4, para. 129.

77 *Ibid.*, Rule 8, para. 129. See also ICRC Guidelines, above note 4, Rule 9, para. 143 regarding choosing the option of least impact.

78 ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts: Recommitting to Protection in Armed Conflict on the 70th Anniversary of the Geneva Conventions*, Geneva, 2019, p. 16.

considerations have long included many types of civilian objects in "collateral damage assessments". The natural environment must also be a part of these assessments, including when fighting in cities, and adequate precautions are to be taken to minimize such damage. Incidental civilian harm can be excessive because of damage to the natural environment alone, or as a combination of damage to the natural environment and harm caused to other civilian objects or civilians, [79] including the indirect effects on humans of environmental damage as shown above. What is to be noted is that damage to the natural environment does not necessarily appear immediately and may be indirect rather than direct, and that "foreseeable reverberating effects of the attack" must be taken into account.[80] In the urban context, urban services are "increasingly complex systems" which are "dependent upon each other":[81] for example, explosive weapons may cause damage to electricity networks, and the resulting disruption to those networks may cause disruptions in the handling of wastewater and sewage which may continue for many months.[82] Such disruptions in urban services may then "seriously harm the quality of water and soil".[83] This harm is foreseeable.

The importance of the protection afforded to the natural environment by virtue of its civilian character cannot be downplayed. Hulme has argued that this protection "has done more to protect [the natural environment] than any environmentally specific rule of [IHL]",[84] such as those discussed above. This is also true in the urban context. The ICRC report *Explosive Weapons with Wide Area Effects: A Deadly Choice in Populated Areas* and the ICRC Commentary on the Additional Protocols highlight the importance of the principles of IHL in densely populated urban areas.[85] The natural environment in cities is everywhere (including under the cities, such as when they are built on top of aquifers), is closely linked with urban life, and is often located close to military objectives. Hence, it is important to comply with the protection provided to the natural environment as a civilian object in urban areas.

Protection stemming from other IHL rules and restrictions on weapons

In addition to the specific and general provisions discussed above, the natural environment is also protected through the restrictions on certain means and methods of warfare. This has, to some extent, been discussed already above regarding means and methods of warfare that would cause widespread, long-term

79 ICRC Guidelines, above note 4, Rule 7, para. 115.
80 C. Droege and M.-L. Tougas, above note 61, pp. 19–20.
81 Mark Zeitoun and Michael Talhami, "The Impact of Explosive Weapons on Urban Services: Direct and Reverberating Effects across Space and Time", *International Review of the Red Cross*, Vol. 98, No. 1, 2016, p. 56.
82 For a detailed description of the "upstream" and "downstream" impacts of explosive attacks on urban services across space and time and the implications for proportionality, see *ibid.*, pp. 56–57.
83 C. Droege and M.-L. Tougas, above note 61, p. 20.
84 K. Hulme, above note 71, p. 678.
85 ICRC Commentary on the APs, above note 57, p. 679, para. 2190; ICRC EWIPA Report, above note 17, p. 102.

and severe damage to the natural environment. However, there are two additional elements provided by the prohibitions and restrictions on the use of certain specific weapons and on methods of warfare. The first relates to the weapons themselves and the damage they may cause to the environment. The second relates to the protection of specific objects, the destruction of which would have severe environmental consequences impacting the civilian population.

First, States party to AP I are obliged to carry out a legal review of whether the employment of new weapons, means or methods of warfare would, in some or all circumstances, be prohibited by the provisions of the Protocol or "by any other rule of international law applicable" to the party.[86] As has been noted by the ICRC, "[p]opulated areas constitute an environment that may render indiscriminate certain methods or means of combat [such as explosive weapons with wide-area impacts] that can be lawfully employed in other circumstances, in open battlefields, for instance".[87] The ICRC Guidelines note that questions to be considered in relation to the natural environment when assessing the legality of weapons could include the conducting and examination of "adequate scientific studies on the effects of the weapon on the natural environment"; taking into account the "type and extent of damage … expected to be directly or indirectly caused to the natural environment", as well as the expected duration of the damage and whether it is "practically/economically possible to reverse the damage"; considering "the direct and indirect impact of the environmental damage on the civilian population"; and taking into account whether "the weapon [is] specifically designed to destroy or damage the natural environment, or to cause environmental modification".[88] Such considerations then need to be taken with regard to the specific characteristics of urban warfare and the protection of the natural environment in urban areas. This provision therefore sets an obligation for States party to AP I to evaluate whether a specific weapon can be lawfully used in the context of urban warfare, taking into account the obligations in relation to the protection of the natural environment in armed conflicts stemming both from treaty law and from customary law.

Such a review can identify, in two categories, weapons of concern when it comes to the environment. First, it can identify weapons that are prohibited because (among, in many cases, other factors) they contain harmful substances.[89] These weapons and their remnants can release toxic chemicals or other harmful materials, leading to environmental contamination and soil and water degradation. They include poison or poisoned weapons, biological weapons and chemical weapons. They cause untold long-term damage to the natural environment and consequently suffering for the civilian population. These weapons are prohibited from being used anywhere, including in urban areas. Although they are not urban- or environment-specific, these prohibitions have the effect of protecting the environment when armed conflicts occur in cities.

86 AP I, Art. 36.
87 ICRC EWIPA Report, above note 17, pp. 88–89.
88 ICRC Guidelines, above note 4, para. 334.
89 C. Droege and M.-L. Tougas, above note 61, p. 31.

The second category comprises weapons that are restricted for use in urban areas because (again, among, in many cases, other factors) of the harm they cause to the civilian population and the environment in urban areas. Incendiary weapons (prohibited when air-delivered and within "a concentration of civilians")[90] are one such example; explosive weapons with wide impact areas are another. While the latter may not be prohibited under a specific convention, their use is regulated by the rules of IHL prohibiting indiscriminate attacks,[91] area bombardment[92] and disproportionate attacks,[93] as well as the obligation to take precautions discussed above. The ICRC and the International Red Cross and Red Crescent Movement (the Movement) have made a call to States and all parties to armed conflicts "to avoid using explosive weapons with a wide impact area in populated areas owing to the significant likelihood of indiscriminate effects", stating that such weapons "should not be used in populated areas unless sufficient mitigation measures can be taken to reduce the weapons' wide area effects and the consequent risk of civilian harm".[94] These weapons are also the subject of the Political Declaration on the Use of Explosive Weapons in Populated Areas.[95] Such legal and policy restrictions protect the natural environment against the toxic substances or other hazardous materials that explosives weapons could release if used in urban areas, contaminating the air, water and/or soil.

Nuclear weapons should also be mentioned here. The ICRC takes the view that "it is extremely doubtful that nuclear weapons could ever be used in accordance with the principles and rules of IHL".[96] It is clear that their use in urban areas would be illegal, because of the catastrophic consequences for the people and the long-term viability of the natural environment in the urban area. Directing nuclear weapons against cities would "violate the principle of distinction", and the use of nuclear weapons "against military objectives located in or near populated areas would violate the prohibitions of indiscriminate and disproportionate attacks".[97] Furthermore, nuclear weapons "can cause significant, long-term, widespread environmental damage, due to the dispersion and the impact of dust, soot and radioactive particles on the atmosphere, soil, water, plants and animals".[98]

90 Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, 17 June 1925 (entered into force 8 February 1928); Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, 10 April 1972 (entered into force 26 March 1975); CCW Protocol III, above note 65; Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, 13 January 1993 (entered into force 29 April 1997).

91 AP I, Art. 51(4); ICRC Customary Law Study, above note 51, Rules 11, 12.

92 AP I, Art. 51(5)(a); ICRC Customary Law Study, above note 51, Rule 13.

93 AP I, Art. 51(5)(b); ICRC Customary Law Study, above note 51, Rule 14.

94 ICRC, "Explosive Weapons in Populated Areas Factsheet", June 2023, available at: www.icrc.org/en/document/explosive-weapons-populated-areas-factsheet. See also ICRC EWIPA Report, above note 17, p. 60.

95 Political Declaration on Strengthening the Protection of Civilians from the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas, 18 November 2022, available at: www.dfa.ie/our-role-policies/international-priorities/peace-and-security/ewipa-consultations.

96 ICRC, "The ICRC's Legal and Policy Position on Nuclear Weapons", *International Review of the Red Cross*, Vol. 104, No. 919, 2022, p. 1481.

97 *Ibid.*

98 *Ibid.*, p. 1496.

Further, certain objects especially relevant in urban warfare are specifically protected; among others, it is prohibited to attack works and installations containing dangerous forces – i.e., dams, dykes and nuclear power plants – when such attacks "may cause the release of dangerous forces" and "consequent severe losses among the civilian population". Also, military objects located close to such works and installations shall not be attacked.[99] It is clear that an attack against these objects in an urban context would cause significant destruction and damage to civilians and civilian objects, including the natural environment in cities and beyond. The devastating impact of the destruction of the Nova Kakhovka dam for the people of the region and their natural environment, and the concern of the international community regarding the protracted fighting near Zaporizhzhia, Europe's largest nuclear power plant, are two recent examples. Although these installations are not based in large urban areas themselves, attacks against them have significant consequences for the surrounding urban areas. Further, the consequences of the peacetime accidents at the Chernobyl and Fukushima nuclear power plants, although not the result of urban warfare, give us an idea of the human and environmental concerns involved if nuclear power plants were to be damaged during urban fighting. As a result of these accidents, the whole city of Pripyat, the town of close to 50,000 people that was built to house the workers of Chernobyl and their families some 2–3 kilometres from the Chernobyl plant, and an area covering a radius of 40 kilometres around Fukushima were rendered, at least temporarily, uninhabitable. The accidents caused severe consequences to the natural environment, including reduction in diversity of ecosystems and richness of species.[100]

Taken together, the limits on means and methods of warfare discussed here provide important layers of protection for the natural environment including in urban warfare. The article will return later to the question of what States can do practically in response to these obligations in relation to urban warfare.

Obligations under other fields of international law

While this article mainly concentrates on IHL, other fields of international law may also be relevant. International human rights law[101] includes, *inter alia*, the right to a

99 AP I, Art. 56. It should be noted that the prohibition in AP I is subject to restrictions listed in Art. 56(2); Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978) (AP II), Art. 15; ICRC Customary Law Study, above note 51, Rule 42 and related practice; ICRC Guidelines, above note 4, Rule 11.

100 Jessica E. Laine, "War in Europe: Health Implications of Environmental Nuclear Disaster amidst War", *European Journal of Epidemiology*, Vol. 37, No. 3, 2022, p. 222; Bundesamt für Strahlenschutz, "Umweltfolgen des Unfalls von Fukushima: Die radiologische Situation in Japan", available at: https://tinyurl.com/yc62ch84.

101 ICRC Guidelines, above note 4, para. 40. On the application of human rights in armed conflict, see also ICJ, *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, *ICJ Reports 2004*, p. 136, para. 136; ICJ, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgment, *ICJ Reports 2005*, p. 168, para. 178; Cordula Droege, "Elective Affinities? Human Rights and Humanitarian Law", *International Review of the Red Cross*, Vol. 90, No. 871, 2008.

healthy environment[102] and indeed can "complement the protection afforded by IHL".[103] Furthermore, as was discussed above, one particularly relevant question with regard to the natural environment in urban warfare is the displacement of persons, as population movements resulting from urban warfare may have significant impact on the natural environment. This impact is recognized, for example, in the African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa, which obliges State Parties to "[t]ake necessary measures to safeguard against environmental degradation in areas where internally displaced persons are located, either within the jurisdiction of the State Parties, or in areas under their effective control".[104]

The other relevant area is international criminal law. The Rome Statute of the International Criminal Court (ICC) features a specific war crime against damage to the natural environment in international armed conflict.[105] Crimes that are committed by means of, or that result in, the destruction of the natural environment were identified by the ICC Office of the Prosecutor, in 2016, as one element to which particular consideration should be given in case selection.[106] As a result of the Rome Statute, States have adopted war crimes legislation in their domestic frameworks related to the environment at the national level.[107] Breaches of international law in relation to damage to the natural environment have also been dealt with in the United Nations (UN). Perhaps most notably, in 1991 the UN Security Council noted, in Resolution 687, that Iraq was "liable under international law for any direct loss, damage – including environmental damage and the depletion of natural resources – or injury to foreign Governments, nationals and corporations as a result of its unlawful invasion and occupation of Kuwait".[108] This has resulted in several awards in relation to damage to the natural environment by the UN Compensation Commission (UNCC).[109]

102 See Inter-American Court of Human Rights, *The Environment and Human Rights*, Advisory Opinion OC-23/17 requested by the Republic of Colombia, 15 November 2017, paras 56–59. See also ICRC Guidelines, above note 4, para. 37.

103 ICRC Guidelines, above note 4, para. 40. For more discussion on human rights and the environment in armed conflict, see ICRC Guidelines, above note 4, paras 37–40.

104 African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa, 23 October 2009 (entered into force 6 December 2012).

105 With regard to environmental damage specifically, see Rome Statute of the International Criminal Court, UN Doc. A/CONF.183/9, 17 July 1998 (entered into force 1 July 2002), Art. 8(2)(b)(iv). In addition, a range of other offences against the environment could fall within various crimes under Article 8(2) of the Rome Statute.

106 ICC Office of the Prosecutor, *Policy Paper on Case Selection and Prioritisation*, 15 September 2016, para. 41.

107 See e.g. Criminal Code of Finland, Chap. 11, Section 5(8); Australian Criminal Code Act, 1995, Division 268; Belgian Criminal Code, 1867, Art. 136*quater*, §1, para. 22.

108 UNSC Res. 687, 3 April 1991, para. 16.

109 See UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning the First Instalment of "F4" Claims*, UN Doc. S/AC.26/2001/16, 22 June 2001; UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning the Second Instalment of "F4" Claims*, UN Doc. S/AC.26/2002/26, 3 October 2002; UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning the Third Instalment of "F4" Claims*, UN Doc. S/AC.26/2003/31, 18 December 2003; UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning Part One of the Fourth Instalment of "F4" Claims*, UN Doc. S/AC.26/2004/16, 9 December

Considering the number of conflicts fought in urban environments today and the increased attention to environmental matters, there is a likelihood that attention to international crimes relevant to the natural environment in the urban context will grow in the future.

Practical measures that States and parties to armed conflict can take to protect the natural environment in urban settings

Having set out how urban warfare damages the natural environment in ways which impact both the environment and people living in urban areas, and the relevant legal frameworks, this article will now turn to the core question of what more can be done to comply with the rules and better protect urban populations. The PERAC Principles and the ICRC Guidelines include a range of practical recommendations for how parties to a conflict can better protect and enhance protection for the natural environment in armed conflict, whether that be before, during or after the conflict. The article will now consider how States (and other actors) might go about implementing these recommendations with the urban natural environment in mind. The following section seeks to draw out and highlight the elements particularly important for urban warfare. It first looks at military doctrine and suggests more concerted efforts by States to explicitly link the conduct of urban warfare to environmental protection. The article then looks at the possibility of establishing protected zones to reduce damage to areas of particular environmental importance or fragility in urban areas. Finally, the article focuses on weapons and explosives in urban areas and how these can be best managed in the interests of the natural environment.

Focus issue: Military doctrine

The ICRC, addressing military commanders and planners, has made it clear that "planners [of urban warfare operations] need to be familiar with and must observe the rules providing protection to the environment under the [law of armed conflict] (including the principles of distinction, proportionality and precautions)".[110] Further, it has stated that "doctrine to inform planning for urban warfare should include … comprehensive guidance on analysing the natural and human environment and civilian infrastructure"[111] and that targeting doctrine should include tools such as a "post-strike battle damage assessment (BDA), including an assessment of the harm caused to civilians, civilian objects

2004; UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning Part Two of the Fourth Instalment of "F4" Claims*, UN Doc. S/AC.26/2004/17, 9 December 2004; UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning the Fifth Instalment of "F4" Claims*, UN Doc. S/AC.26/2005/10, 30 June 2005.

110 ICRC, *Reducing Civilian Harm in Urban Warfare: A Commander's Handbook*, Geneva, 2023, p. 43.

111 *Ibid.*, p, 18.

(including infrastructure) and parts of the natural environment".[112] While a number of militaries have both urban warfare and environmental policies/doctrines, we have not been able to find a clear example where military doctrine explicitly speaks to conducting urban warfare in such a way as to ensure the protection of the natural environment. That said, there is some military doctrine which demonstrates the need for militaries to be prepared for urban warfare and which also makes reference to the need to have regard to environmental considerations when making targeting decisions. NATO Joint Targeting Doctrine acknowledges the increasing urbanization of battlefields and notes that "NATO forces must be prepared to conduct a wide range of activities, often simultaneously, within a single area or multiple areas of operation, areas which are becoming increasingly urbanized".[113] Under this doctrine, environmental considerations are one of the restrictions that might be placed on attacking an otherwise valid target.[114]

Another relevant example is the *Environmental Guidebook for Military Operations* (the Guidebook) jointly produced by the US, Sweden and Finland.[115] It includes an environmental toolbox with tangible information for planning and implementing environmental practices (including a field card and site-specific information) and a training module for commanders, environmental officers and soldiers.[116] The Guidebook underscores that "the integration of environmental considerations into all aspects of operational planning, training, and execution is essential for maintaining the health and well-being of the deployed troops and the local population". This is particularly true in populated areas such as cities, even if the Guidebook does not address urban warfare in a distinct manner.[117] US doctrine also takes note that the urban environment includes the "natural terrain";[118] however, it goes on in the same document to clearly identify the natural environment as either a resource for the military to use or the source of a threat given that the enemy could use it (e.g. for camouflage or as obstacles), rather than as something in need of protection. As such, it is clear that militaries could and should better ensure that doctrines around urban warfare explicitly reference measures to ensure the protection of the natural environment, and conversely that doctrine or other guidance documents on the protection of the natural environment highlight the specific challenges of protecting the natural environment during urban warfare.

112 *Ibid.*, p. 20.

113 NATO, *NATO Standard AJP-3.0: Allied Joint Doctrine for Joint Targeting*, Edition B, Version 1, November 2021, p. 1-1, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033306/AJP-3.9_EDB_V1_E.pdf.

114 Ibid., pp. 1-8, 1-22.

115 United States, Finland and Sweden, *Environmental Guidebook for Military Operations*, March 2008, available at: https://ceobs.org/wp-content/uploads/2018/03/Guidebook_final_printing_version.pdf.

116 See Finland, Sweden and United States, *Environment Toolbox for Deploying Forces*, extracts available at: https://vdocuments.mx/developed-by-trilateral-cooperation-of-defence-environmental-experts-from-finland.html?page=2.

117 Ibid, checklist phase 1.

118 US Department of the Army, *Combined Arms Operations in Urban Terrain*, ATTP 3-06.11 (FM 3-06.11), 2011, p. xii, available at: https://tinyurl.com/3n9ywx69.

Militaries themselves acknowledge the increasing concern for the protection of the natural environment, including when fighting in cities. For instance, a 2020 report by the Defence Science and Technology Laboratory of the UK Ministry of Defence (MoD), in speaking about fighting in cities, observes that "the UK military may come under increasing pressure from otherwise disinterested actors to do the least possible damage to the environment during operations"[119] and that "there may be merit in employing environmental specialists to support operations in a similar manner to how legal and policy advisers are currently used".[120] In making the recommendation that militaries pay greater regard to the protection of the natural environment when planning for, training for and conducting urban warfare, it is noted that protecting the environment in urban warfare can also have military benefits. That same UK MoD report notes the threat of urban warfare's environmental degradation to the military personnel themselves, noting that, "for example, breathing apparatus may need to be routinely used in order to prevent contamination from toxic chemicals and biological waste, avoid the spread of disease and operate in urban areas with dangerous levels of air pollution".[121]

Focus issue: Protected areas in urban contexts

The concept of establishing protected zones to reduce damage to areas of particular environmental importance or fragility continues to garner attention. There have been several proposals to designate environmental areas as protected zones that have been well documented, starting from the proposal at the time of the Additional Protocols' drafting.[122] Most recently, Principle 4 of the PERAC Principles provides that "States should designate, by agreement or otherwise, areas of major environmental and cultural importance as protected zones". The ICRC Guidelines make a similar recommendation.[123] It might be commonly assumed that the establishment of protected zones would occur in more remote and rural areas, but areas within or close to an urban environment may also have important ecological value. Indeed, with increasing urbanization and urban sprawl, many areas of environmental importance or fragility are today surrounded by cities. For example, Nairobi National Park is an important area of natural beauty and biodiversity that is co-located with a dense urban population. A study by the International Union for Conservation of Nature looking specifically at the need for the protection of urban environmental areas notes a number of others, including Table Mountain National Park, which adjoins Cape

119 *Ibid.*, p. 34.

120 MoD Defence Science and Technology Laboratory, *Future Cites: Trends and Implications*, 2020, p. 33, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/875528/Dstl_Future_Cities_Trends___Implications_OFFICIAL.pdf.

121 *Ibid.*, p. 35.

122 See, further, C. Droege and M.-L. Tougas, above note 61, pp. 43–45; but also, more simply, CEOBS, *An Overview of Area-Based Environmental Protection in Relation to Armed Conflict*, 8 October 2020, available at: https://ceobs.org/conflicts-and-conservation-the-promise-and-perils-of-protected-zones/.

123 ICRC Guidelines, above note 4, Recommendation 17.

Town in South Africa; Sanjay Gandhi National Park, which is increasingly encircled by Mumbai in India; and Tijuca National Park, which is surrounded by Rio De Janeiro in Brazil.[124] It is suggested that such areas would be appropriate for designation as protected zones under the environmental aspect of PERAC Principle 4 should the need arise.

Focus issue: Clearing toxic remnants of war and debris in urban areas

Regardless of how meticulously the rules are followed, armed conflicts damage the natural environment. However, the impact of urban warfare on the natural environment can be minimized with "concrete, practical measures"[125] in the aftermath of hostilities to ensure the "continued habitability of the territory".[126] The correct destruction of weapons after a conflict[127] is a particularly relevant consideration in urban areas and indeed a legal obligation under many instruments of international law, including the Protocol on Explosive Remnants of War under the Convention on Certain Conventional Weapons, the Anti-Personnel Mine Ban Convention and the Cluster Munitions Convention, as well as customary IHL.[128]

If unused and unexploded ordinance is not properly handled, the consequences in urban settings can be long-lasting. As was noted earlier in this article, weapon remnants contain toxic chemicals which can leak into the soil, subsoil and watercourses and have significant environmental and human health impacts. Particularly long-lasting impacts include the subsequent inability of responders to prioritize the repair of the key infrastructure required for the city to function until the remnants are removed, and the breakdown of the efficient functioning of the ecosystem.

Cardon *et al.* note the need to "mark and clear all unexploded remnants of war and solicit international support for humanitarian demining".[129] Clearing of weapon remnants is needed to protect the environment, but is itself not an activity without environmental consequences. Standards must be applied to ensure that it is done without causing further environmental damage.[130] While such clearance will be important everywhere, including in rural areas to return

124 See, further, International Union for Conservation of Nature, *Urban Protected Areas: Profiles and Best Practice Guidelines*, Gland, 2014, available at: https://portals.iucn.org/library/sites/library/files/documents/PAG-022.pdf.

125 Christian Cardon, Thomas de Saint Maurice and Kelisiana Thynne, "Aftermath of Battles and Conflict: From Challenges to Solutions", *Humanitarian Law and Policy Blog*, 13 September 2022, available at: https://blogs.icrc.org/law-and-policy/2022/09/13/aftermath-battles-conflict-challenges-solutions/.

126 Ramin Mahnad and Kelisiana Thynne, "Silenced Guns Do not Mend Lives: What Does the Law Say about Human Suffering at the End of Conflict?", *Humanitarian Law and Policy Blog*, 21 July 2022, available at: https://blogs.icrc.org/law-and-policy/2022/07/21/silenced-guns-lives-law-end-of-conflict/.

127 C. Cardon, T. de Saint Maurice and K. Thynne, above note 125.

128 CCW, above note 65, Protocol (V) on Explosive Remnants of War, 28 November 2003 (entered into force 12 November 2006); Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction, 18 September 1997 (entered in force 1 March 1999), Art. 5; Convention on Cluster Munitions, 30 May 2008 (entered into force 1 August 2010), Art. 4; ICRC Customary Law Study, above note 51, Rule 83.

129 C. Cardon, T. de Saint Maurice and K. Thynne, above note 125.

130 See, further, ICRC Guidelines, above note 4, Rules 25, 26.

agricultural lands to productive use, it will be particularly important in the urban environment in order to allow for the safe movement of civilians and the correct functioning of civilian infrastructure. Even small projects can have significant impacts for civilian communities.[131]

Further, the issue of toxic remnants of war more broadly is of particular concern in urban areas. As detailed earlier in the article, the toxic and dangerous products found in building materials (including asbestos) and ash from burning toxic debris impact the natural environment.[132] An example of a specific remedial project to address this is in Iraq. The UN Environment Programme (UNEP) has worked with municipal authorities in Mosul since 2017 to clear the debris of the conflict, and in mid-2022 it announced the handover to the Mosul Municipality of a debris recycling centre.[133] The focus of this project is the "restabilization of the liberated areas in an environmentally sustainable manner";[134] that is, the project does not just consider the future uses of the land for civilian purposes, but also considers environmental sustainability. Such projects have human and environmental benefits and should be a post-conflict focus.

Elsewhere in this issue of the *Review*, Obregón Gieseken and Murphy explore the practical measures that must be taken to protect the natural environment in times of armed conflict regardless of the location of the natural environment needing protection.[135] Although to date the protection of the natural environment does not appear to have been a major consideration during urban warfare, increasing urbanization and the resulting increasing prevalence of urban warfare – and the significant consequences, as detailed earlier in this article – mean that it should be. Indeed, in our view, it is important for States to ensure that military members – and especially planners – are aware of the scope of what the natural environment encompasses and the damage to the natural environment that attacks in urban areas can cause.

All of this is not to say that putting in place such measures will prevent all environmental harm caused by urban warfare. Many of these points will need consideration – not only during conflict, but also prior to conflict breaking out, and in the aftermath of conflict if preventative measures fail to provide adequate protection. Importantly, giving prior consideration to preventing environmental harm during urban warfare can have a positive impact. A particularly evident

131 For an example project, see "Back to School: Displaced by Conflict, Children from Ubari, Southern Libya, Return Home and to the Classroom", *ReliefWeb*, 6 April 2018, available at: https://reliefweb.int/report/libya/back-school-displaced-conflict-children-ubari-southern-libya-return-home-and-classroom.

132 *Report of the Special Rapporteur on Toxics and Human Rights: Adverse Effects of the Illicit Movement and Dumping of Toxic and Dangerous Products and Wastes on the Enjoyment of Human Rights*, UN Doc. A/HRC/5/5, 5 May 2007.

133 UNEP, "Mosul's Recovery Moves Towards a Circular Economy", 28 July 2022, available at: www.unep.org/news-and-stories/press-release/mosuls-recovery-moves-towards-circular-economy.

134 *Ibid.*

135 Such practical measures were also explored by States in an expert meeting convened by the ICRC and Switzerland in 2023. See Switzerland and ICRC, *Chair's Summary Report of State Expert Meeting on IHL: Protecting the Natural Environment in Armed Conflict*, 2023, available at: www.icrc.org/en/document/chairs-summary-report-state-expert-meeting-ihl-protecting-natural-environment-armed.

takeaway is how much action can be taken prior to the outbreak of hostilities. This prior planning is particularly important in urban areas, where dense populations are so reliant both on the interconnected infrastructure and on the natural environment that they do have.

Conclusion

Addressing the humanitarian impact of urban warfare requires a huge range of considerations that go well beyond the points being made in this article about the natural environment.[136] Humanity is currently facing a collision of challenges: a change in global demographics that features, for the first time in history, more people living in urban than in rural areas; and a tipping-point chance to address the climate risks the planet is now facing. The humanitarian impacts of conflict-related damages to the natural environment – especially in and around populated areas and essential civilian infrastructure, and the environmental damage which results from widespread urban displacement – only exacerbate these intersecting challenges.

This article, having identified a range of environmental consequences of urban warfare, has laid out the legal frameworks for the protection of the natural environment which are of particular (although not necessarily unique) relevance in urban warfare, with a focus on the rules of IHL. These legal obligations give rise to a range of actions that States can take to ensure meaningful implementation. Being conscious of the risk of harm that urban warfare creates for the natural environment is the first step. Taking measures to ensure that doctrine, planning, training, protected zone designation, weapons reviews and clean-up measures all take on board this interplay and minimize environmental impacts must then follow. This interplay between the urban environment and the natural environment is something noted by the International Red Cross and Red Crescent Movement as it seeks to do more to prevent and respond to the humanitarian impacts of urban warfare. Indeed, environmental damage and the obligations protecting the natural environment are a part of the ambitious multi-year plan of action that the Movement adopted in June 2022 on war in cities.[137] Stahn *et al.* make the point that "the mandate to protect the environment during and after armed conflict is inherently linked to the needs of future generations".[138] Given that around 70% of those future generations will live in cities, thinking about the conduct of urban warfare with the natural environment in mind is therefore of great importance.

136 See further the range of themes addressed in Council of Delegates of the International Red Cross and Red Crescent Movement, "Resolution 6: War in Cities", 22–23 June 2022, available at: https://rcrcconference.org/app/uploads/2022/06/CD22-R06-War-in-cities_22-June-2022_FINAL_EN.pdf.

137 *Ibid.*

138 C. Stahn, J. Iverson and J. S. Easterday (eds), above note 68, p. 10.

International Review of the Red Cross (2023), **105** (924), 1337–1364.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000334

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Another brick in the wall: Climate change (in)adaptation under the law of belligerent occupation

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Abstract

This article explores the legal obligations of Occupying Powers with regard to climate change adaptation for local populations and their environment under the law of occupation, specifically in the context of prolonged belligerent occupations. It focuses on the critical matter of water and food security, in light of the increasing frequency and severity of extreme weather events. After shedding light on the intricate issues that arise at the intersection of climate change and belligerent occupation, the article argues that the general obligations incumbent upon the Occupying Power under occupation law, when viewed through a climate lens, can be construed as addressing the heightened climate vulnerability faced by occupied populations.

Keywords: belligerent occupations, climate change adaptation, law of occupation, extreme weathers events, water and food security.

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Introduction

Principle 23 of the 1992 Rio Declaration stipulates that "[t]he environment and natural resources of people under oppression, domination and occupation shall be protected".[1] Thirty years later, as the climate crisis and biodiversity loss grow more alarming and their impact on human beings becomes more apparent, this principle has taken on even greater importance. In particular, in situations of occupation, local populations endure the "dual strike" of being affected not only by the consequences of belligerent occupation on their capacity to deploy adaptation strategies but also by the increasingly adverse impacts of climate change, resulting in an exacerbated climate vulnerability.[2] Building upon this premise, this article seeks to unearth the obligations of Occupying Powers, as "temporary administrators" of territories under their control, in facilitating the local population's adaptation to climate change. Specifically, the article examines the Occupying Power's obligations as prescribed by the law of occupation, a subset of international humanitarian law (IHL) and specialized regime applicable in situations of occupation.

Arguably, the scope of the obligations and powers imposed on the Occupying Power evolves over time[3] and in light of the overall stability of the situation[4], while, more fundamentally, climate change adaptation might not always be a priority in short-term occupations. Therefore, the author puts an emphasis on so-called "prolonged occupations". As the occupation lingers on, obstacles to adaptation may multiply, resulting in a "slow and structural violence"[5] that leads to climate injustice by depriving present and future generations of their ability to cope with one of the most serious threats to humankind. Considering the broad range of climate change impacts affecting populations around the world and their environment, this article focuses solely on the crucial issue of water and food security in light of increasingly extreme weather events.

1 Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26, 12 August 1992.

2 To the best of the author's knowledge, the capital importance of this "dual strike" was most prominently voiced by the late Suha Jarrar, senior legal researcher and advocacy officer at Al-Haq. See Suha Jarrar, *Adaptation under Occupation: Climate Change Vulnerability in the Occupied Palestinian Territory*, Al-Haq, 2019, p. 12.

3 ICRC, *Commentary on the First Geneva Convention: Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field*, 2nd ed., Geneva, 2016, para. 322; Hanne Cuyckens, *Revisiting the Law of Occupation*, Brill, Boston, MA, 2017, p. 162.

4 Vaios Koutroulis, "The Application of International Humanitarian Law and International Human Rights Law in Situation of Prolonged Occupation: Only A Matter Of Time?", *International Review of the Red Cross*, Vol. 94, No. 885, 2012, p. 205.

5 The concept of "slow and structural violence" is borrowed from Eliana Cusato's remarkable book: see Eliana Cusato, *The Ecology of War and Peace: Marginalizing Slow and Structural Violence in International Law*, Cambridge University Press, Cambridge, 2021, pp. 19–25. Adapted to this article, the concept refers to the gradual and persistent ecological harm inflicted on people and the environment as a result of the structural and systemic conditions that arise during and after armed conflicts, in this case in belligerent occupations. It is this insidious harm that prevents local populations from adapting to and mitigating the effects of climate change.

Although not sovereign over the occupied territory, the Occupying Power exercises State-like administrative duties and thus "some of the rights of sovereignty".[6] Under the law of occupation, the Occupying Power is bound by two core obligations: ensuring the welfare of the local population and respecting the laws in force in the occupied territory. After briefly stressing the exacerbated climate vulnerability of local populations in situations of occupation and giving an overview of the legal frameworks applicable to occupation and climate change adaptation respectively, this article then scrutinizes the adequacy of occupation law in responding to the challenge of climate change in occupied territories. The article goes on to examine the extent to which the Occupying Power's obligation to ensure the welfare of the population under occupation includes climate change adaptation; it then turns to how this obligation interacts with the Occupying Power's duty to maintain the *status quo ante bellum* in the occupied territory. Finally, the article briefly discusses the relevance of natural resource management rules under occupation law for adapting to climate change. Despite the absence of specific provisions on environmental protection, the article argues that the law of occupation remains, through its flexible standards of protection, a solid foundation upon which climate change obligations for the Occupying Power can be conceptualized.

Two caveats are warranted. The first stems from the inherently case-specific nature of the scope of obligations applicable during belligerent occupations and the need to maintain a realistic approach. Because every situation of occupation is unique, determining an Occupying Power's obligations *in abstracto* may prove difficult.[7] While this article aims to appraise a general scope of obligations, it acknowledges that they can vary depending on the specific circumstances on the ground and the potential swings from periods of "negative peace"[8] to active hostilities. A second caveat relates to the point of tension permeating this article, which is intrinsic to the very object of inquiry: climate action is inextricably linked to statecraft and sovereignty. Therefore, although necessary to shield the occupied population from the consequences of climate change, any positive actions undertaken by the Occupying Power, and pleas for extended powers in prolonged occupations, must be weighed against the potential for perpetuating and legitimizing the occupation.

Setting the scene: Climate, humanity and conflict

Before embarking on the exploration of an Occupying Power's climate-related obligations, the rationale of this article must be refined. After briefly restating the

6 Knut Dörmann and Hans-Peter Gasser, "Protection of the Civilian Population", in Dieter Fleck (ed.), *The Handbook of International Humanitarian Law*, Oxford University Press, Oxford, 2013, p. 274.

7 H. Cuyckens, above note 3, p. 152.

8 See the definition of "negative peace" provided by the Institute for Economics and Peace (IEP) in IEP, *Positive Peace Report 2022*, January 2022, p. 8, available at www.economicsandpeace.org/wp-content/uploads/2022/01/PPR-2022-web.pdf (all internet references were accessed in August 2023); negative peace is defined therein as "the absence of violence or fear of violence".

intrinsic links between climate change, humans and conflict, through the notions of "adaptation" and "adaptive capacity", and portraying the climate injustice that local populations in prolonged occupations might suffer from, this section provides an overview of the legal regimes applicable specifically to occupation and climate change adaptation respectively.

Climate change and occupation: Exacerbated vulnerabilities

It is unequivocal today that human activities, such as the burning of fossil fuels and deforestation, have left an indelible mark on the climate. In a twist of fate, the climate crisis has now become one of the greatest threats facing humanity.[9] Climate change is deeply affecting human beings, disrupting ecosystems, biodiversity and overall planetary health. It is impairing the enjoyment of human rights all around the world[10] – but disproportionately for vulnerable communities. Increasing climate extremes are exposing communities to aggravated food insecurity while alarmingly impacting water security.[11] As powerfully stated by the Intergovernmental Panel on Climate Change (IPCC) in its report of 27 February 2022, "[a]ny further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all".[12]

Mitigation, described as "human intervention to reduce emissions or enhance the sinks of greenhouse gases",[13] goes hand in hand with adaptation, which implies "taking action to prepare for and adjust to both the current effects of climate change and the predicted impacts in the future".[14] Whereas mitigation efforts are primarily concerned with preserving a sustainable environment in the future, adaptation measures are implemented in response to the significant issues that communities affected by climate change are often already facing.

Adaptation measures can "focus specifically on climate change impacts, such as developing heat-resistant crops and building sea walls", but most commonly, they aim to enhance societies' resilience to generalized risks.[15]

9 UN Security Council, "Climate Change 'Biggest Threat Modern Humans Have Ever Faced', World-Renowned Naturalist Tells Security Council, Calls for Greater Global Cooperation", press release, UN Doc. SC/14445, 23 February 2021.

10 UN Human Rights Council (HRC), *Human Rights and Climate Change*, UN Doc. A/HRC/RES/44/7, 23 July 2020, para. 19; UN Environment Assembly of the UN Environment Programme, Res. 4, "Environment and Health", UN Doc. UNEP/EA.3/Res. 4, 30 January 2018, para. 18.

11 IPCC, *Climate Change 2023: Synthesis Report on the IPCC Sixth Assessment Report (AR6): Summary for Policmakers*, 19 March 2023, p. 5, para. A.2.2.

12 IPCC, *Climate Change 2022: Impacts, Adaptation and Vulnerability*: *Summary for Policymakers*, 27 February 2022, p. 5.

13 IPCC, "Annex I: Glossary", in *Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming of 1.5°C above pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*, 2018, p. 554.

14 European Commission, "EU Adaptation Strategy", available at: https://ec.europa.eu/clima/eu-action/adaptation-climate-change/eu-adaptation-strategy_en.

15 Daniel Bodansky, Jutta Brunnée and Lavanya Rajamani, *International Climate Change Law*, Oxford University Press, Oxford, 2017, p. 14.

Essentially, such measures seek to ensure adaptive capacity, described as "the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences".[16] It goes without saying that preserving the adaptive capacity of ecosystems and thus strengthening their protection is all the more vital as they constitute "a major source of human resilience and can support the adaptation of human societies to rapid environmental change".[17] Humans and the environment in which they live are inextricably linked,[18] and their respective vulnerabilities are interdependent.[19]

Particularly vulnerable to climate change are populations affected by the plague of armed conflicts, occupations included.[20] The combined impact, or "double hit",[21] of climate change and armed conflicts was examined by the International Committee of the Red Cross (ICRC) in its report *When Rain Turns to Dust*, which highlights that "[t]he convergence of climate risks and conflict further worsens food and economic insecurity and health disparities [and] limits access to essential services, while weakening the capacity of governments, institutions and societies to provide support".[22]

Climate change's impacts and armed conflicts are mutually reinforcing, and the impacts of armed conflicts on the environment have gained increasing attention in contemporary scholarly literature.[23] In situations of occupation, such impacts include the potential deterioration of environmental programmes and infrastructures and the sidelining of sustainable development.[24] Environmental harm can also take the form of

> looting and killing of species, scorched earth policies involving the destruction of agricultural areas and forests, the contamination of rivers and wells necessary for human subsistence, excessive natural resource exploitation, and environmental harm through the neglect of maintenance of facilities, such as nature reserves, coal mines, and dams.[25]

16 IPCC, above note 13, p. 542.
17 Yadvinder Malhi *et al.*, "Climate Change and Ecosystems: Threats, Opportunities and Solutions", *Philosophical Transactions of the Royal Society B*, Vol. 375, No. 1794, 2020, p. 7.
18 HRC, *Report of the Special Rapporteur on the Issue of Human Rights Obligations relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment*, UN Doc. A/HRC/37/59, 24 January 2018.
19 IPCC, above note 11, p. 5; IPCC, above note 12, p. 11.
20 IPCC, *Climate Change 2007: Synthesis Report: Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate* Change, 2007, p. 14. See also IPCC, above note 12, p. 11.
21 Tuiloma Neroni Slade, "International Humanitarian Law and Climate Change", in Suzannah Linton, Tim McCormack and Sandesh Sivakumaran (eds), *Asia-Pacific Perspectives on International Humanitarian Law*, Cambridge University Press, Cambridge, 2019, p. 644.
22 ICRC, *When Rain Turns to Dust: Understanding and Responding to the Combined Impact of Armed Conflicts and the Climate and Environmental Crisis on People's Lives*, Geneva, 2020, p. 8.
23 Rosemary Rayfuse, *War and the Environment: New Approaches to Protecting the Environment in Relation to Armed Conflicts*, Brill, Leiden, 2014.
24 Douglas Weir, "How Does War Damage the Environment?", Conflict and Environment Observatory, 4 June 2020, available at: https://ceobs.org/how-does-war-damage-the-environment/.
25 Karen Hulme, "Enhancing Environmental Protection during Occupation", *Goettingen Journal of International Law*, No. 10, 2020, p. 205.

The collapse or weakening of environmental and climate governance, as well as direct environmental damages, can adversely affect climate resilience, leading to the annihilation of mitigation and adaptation efforts, and hence exacerbating climate vulnerability.[26] As put forward by Mason, climate vulnerability "denotes the idea of exposure to climate-related hazards in the context of biophysical and social vulnerability, as well as in relation to response capabilities in both the short term (coping) and long term (adaptation)".[27] The added layer of climate vulnerability generated by situations of occupation can amplify and perpetuate "the already prevalent marginalization of communities who are … dependent on natural wealth and resources".[28]

Although it is beyond the scope of this article to explore the Byzantine link between climate change and armed conflicts, it is worth noting that the climate crisis is increasingly viewed as a "threat multiplier, driving the likelihood of conflict, including violent conflict".[29] As a result, the vulnerability of populations in occupied territories is compounded by the fact that the effects of climate change, particularly on the availability of natural resources, are thought to aggravate tensions and serve as an impetus for violence. In a vicious circle, active conflicts have harmful consequences on environmental resilience and, as a result, climate change adaptation. While there is a wealth of research in scholarly literature on the interplay between security, armed conflict and climate change, as well as the environmental impacts of armed conflicts, considerably less attention has been devoted to the issue of climate vulnerability of populations under (prolonged) occupation.[30] Yet this issue raises fundamental questions "about the bounds of justice, including duties to those deemed most vulnerable to present and future climate hazards".[31]

Climate change and occupation: Legal frameworks

This section provides a succinct overview of the legal framework regulating occupation and the nature of so-called "prolonged occupations". It then touches

26 Eoghan Darbyshire, "How Does War Contribute to Climate Change?", Conflict and Environment Observatory, 14 June 2021, available at: https://ceobs.org/how-does-war-contribute-to-climate-change/; ICRC, "ICRC to UN Security Council: Double Impact of Climate Change and Armed Conflict Harms People's Ability to Cope", statement, 25 January 2019, available at: www.icrc.org/en/document/icrc-un-security-council-double-impact-climate-change-armed-conflict-harms-peoples-ability-cope.

27 Michael Mason, "The Ends of Justice: Climate Vulnerability Beyond the Pale", in David Held, Marika Theros and Angus Fane-Hervey (eds), *The Governance of Climate Change*, Polity, Cambridge, 2011, p. 164.

28 S. Jarrar, above note 2, p. 9.

29 Kirsten Davies, Thomas Riddell and Jürgen Scheffran, "Preventing a Warming War: Protection of the Environment and Reducing Climate Conflict Risk as a Challenge of International Law", *Goettingen Journal of International Law*, Vol. 10, No. 1, 2020, p. 313. This finding should nevertheless be treated with caution, as "[a]ssessments of the links between climate change and violent conflict are still unclear about many important elements": Jürgen Scheffran, Michael Brzoska, Jasmin Kominek, P. Michael Link and Janpeter Schilling, "Disentangling the Climate-Conflict Nexus: Empirical and Theoretical Assessment of Vulnerabilities and Pathways", *Review of European Studies*, Vol. 4, No. 5, 2012, p. 9.

30 S. Jarrar, above note 2, p. 10.

31 M. Mason, above note 27, p. 163.

upon the regime of international climate change law and addresses its applicability in situations of occupation.

International law of belligerent occupation

The law of occupation refers to the specific legal framework governing situations of occupation, defined as a situation in which a territory "is actually placed under the authority of the hostile army. The occupation extends only to the territory where such authority has been established and can be exercised."[32] The Occupying Power, exerting a *de facto* authority over the occupied territory, is vested by the law of occupation with a range of duties and powers. The latter are primarily spelled out in the Hague Regulations concerning the Laws and Customs of War on Land (Hague Regulations), Geneva Convention IV (GC IV),[33] Additional Protocol I to the Geneva Conventions (AP I)[34], and customary IHL.

Although it is commonly regarded as a particular form of international armed conflict, the unique features of belligerent occupation make it a rather strange bird. Whether conducted with or without active hostilities,[35] occupation is characterized by the effective, and coercive,[36] control of an Occupying Power "over a territory to which that power has no sovereign title",[37] and by the ousted sovereign's loss of authority over that territory.[38] The crux of belligerent occupation lies in its temporary character. By reason of this temporality, one of the fundamental principles of the law of occupation is that the Occupying Power must maintain the *status quo ante bellum*, and is thus prohibited, with some exceptions, from altering the laws in force and adopting far-reaching and permanent changes in the occupied territory.[39] On the other hand, another key obligation of the Occupying Power consists in restoring and ensuring public order and safety within the territory, understood as looking after the welfare of the local population, which might necessitate the adoption of legislative measures. The underlying tension between these two obligations is particularly apparent when the occupation persists over time.

32 Hague Convention (IV) Respecting the Laws and Customs of War on Land and Its Annex, Regulations Concerning the Laws and Customs of War on Land, The Hague, 18 October 1907 (Hague Regulations), Art. 42.

33 Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War of 12 August 1949, 75 UNTS 287 (entered into force 21 October 1959) (GC IV).

34 Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I).

35 Yoram Dinstein, *The International Law of Belligerent Occupation*, Cambridge University Press, Cambridge, 2019, p. 35.

36 *Ibid*., pp. 38–39.

37 Eyal Benvenisti, *The International Law of Occupation*, Oxford University Press, Oxford, 2012, p. 3; Y. Dinstein, above note 35, p. 43.

38 Marco Longobardo, *The Use of Armed Force in Occupied Territory*, Cambridge University Press, Cambridge, 2018, p. 30.

39 Hague Regulations, above note 32, Art. 43.

Recent history has repeatedly demonstrated that belligerent occupations can linger on for many years, challenging the intended temporary nature of such situations.[40] This has prompted scholars to inquire as to whether the extended duration of so-called "prolonged occupations" affects the duties and powers established under IHL.[41] While the term "prolonged occupation" is not strictly defined,[42] Hughes attempts to frame the concept beyond its mere duration, as an occupation that "shifts from a regulated phase that preserves sovereignty and ensures uninterrupted humanitarian consideration to a form of foreign control that threatens to become permanent".[43]

While the protracted duration of an occupation does not fundamentally alter its temporary – in the sense of "provisional" – nature, it has been argued in scholarly discussion that it nevertheless bears legal implications.[44] Prolonged occupations can, to some extent, "approximate peacetime"[45] in terms of relative stability and absence of active hostilities. While IHL does not differentiate between "short-term" and "long-term" occupations, the duration of the occupation may arguably affect the scope of the Occupying Power's duties and powers.[46] In fact, the Israeli Supreme Court has held that, as a situation of occupation persists, "not only is the [Occupying Power] entitled and obliged to react to changing conditions: it is empowered to undertake major investments and long-term planning that would anticipate the future demands of the local community".[47]

Regardless of duration, all belligerent occupations are primarily governed by the law of occupation. This body of law acts as "a gap filler … that replaces the void that occurs with the temporary ousting of the sovereign government".[48] However, while occupation law is a specialized regime applicable in situations of

40 See V. Koutroulis, above note 4, p. 167: the temporary nature essentially "reflects the idea that a belligerent occupation does not change the status of the occupied territory but merely suspends the exercise of the ousted sovereign's rights over the said territory".

41 Yutaka Arai-Takahashi, "Unearthing the Problematic Terrain of Prolonged Occupations", *Israel Law Review*, Vol. 52, No. 2, 2019, p. 145.

42 V. Koutroulis, above note 4, p. 168. Adam Roberts defines prolonged occupation as "an occupation that lasts more than 5 years and extends into a period when hostilities are sharply reduced": see Adam Roberts, "Prolonged Military Occupation: The Israeli-Occupied Territories since 1967", *American Journal of International Law*, Vol. 84, No. 1, 1990, p. 47.

43 David Hughes, "Moving from Management to Termination: A Case Study of Prolonged Occupation", *Brooklyn Journal of International Law*, Vol. 44, No. 1, 2018, p. 114.

44 Y. Dinstein, above note 35, p. 58; Supreme Court of Israel, *Jamayat Askan Alma'Almun Althaunia Almahduda Almasaulia, Lawfully Registered Cooperative in Regional Command of Judea and Samaria v. Commander of IDF Forces in the Judea and Samaria Region – the Superior Planning Council for the Judea and Samaria Region*, Case No. HCJ 393/82, 12 December 1983, para. 12.

45 A. Roberts, above note 42, p. 47.

46 Y. Dinstein, above note 35, p. 128; E. Benvenisti, above note 37, p. 246; Philip Spoerri, "The Law of Occupation", in Andrew Clapham and Paola Gaeta (eds), *The Oxford Handbook of International Law in Armed Conflict*, Oxford University Press, Oxford, 2015, pp. 197–198.

47 E. Benvenisti, above note 37, p. 246, referring to Supreme Court of Israel, *The Christian Society for the Sacred Places v. Minister of Defence*, Case No. HCJ 337/71, 1972, and Supreme Court of Israel, *Jamayat Askan Alma'Almun Althaunia Almahduda Almasaulia*, above note 44.

48 Eyal Benvenisti, "Occupation and Territorial Administration", in Rain Liivoja and Tim McCormack (eds), *Routledge Handbook of the Law of Armed Conflict*, Routledge, New York, 2016, p. 435.

occupation, it does not exist in a legal vacuum and applies concurrently to other regimes of international law, such as international human rights law[49] and international environmental law.[50] In contrast with the conduct of hostilities, situations of prolonged occupation offer a wider window of harmonious interpretation between these co-applicable regimes.[51]

International climate change law

International climate change law forms the legal framework developed at the global level to address the causes and impacts of climate change, in terms of mitigation and adaptation. It consists of various multilateral agreements, institutions and principles aimed at promoting collective action to tackle climate change. The cornerstone of international climate change law is the United Nations Framework Convention on Climate Change (UNFCCC),[52] adopted in 1992.[53] The UNFCCC sets out general principles and objectives, including the stabilization of greenhouse gas concentrations in the atmosphere to prevent dangerous anthropogenic interference with the climate system, as well as climate change adaptation.[54] Climate change adaptation takes place at different levels: it involves changes in individual behaviour, collective action by communities and non-governmental organizations and, ultimately, local, sectoral and national policies and legislative measures taken by the State.[55] According to the classification suggested by the IPCC, adaptation options can be structural/physical, social or institutional.[56] The first category includes, in particular, "structural and engineering options; the application of discrete technologies; the use of ecosystems and their services to

49 International Court of Justice (ICJ), *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996* (Nuclear Weapons Advisory Opinion), para. 25; ICJ, *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, *ICJ Reports 2004* (Wall Advisory Opinion), paras 107–113; ICJ, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgment, *ICJ Reports 2005*, para. 216. See also International Criminal Tribunal for the former Yugoslavia, *Prosecutor v. Naletilić and Martinović*, Case No. IT-98-34, Judgment (Trial Chamber), 31 March 2003, para. 214; Malcolm N. Shaw, *International Law*, 7th ed., Cambridge University Press, Cambridge, 2014, p. 857; International Law Commission (ILC), *First Report on the Protection of the Environment in Relation to Armed Conflicts by Marja Letho, Special Rapporteur*, UN Doc. A/CN.4/720, 30 April 2018, para. 14.

50 Nuclear Weapons Advisory Opinion, above note 49.

51 See ILC, above note 49, p. 41; Sari Bashi, "Human Rights in Indefinite Occupation: Palestine", *International Comparative, Policy and Ethics Law Review*, Vol. 3, No. 3, 2020, p. 825; Noam Lubell, "Human Rights Obligations in Military Occupation", *International Review of the Red Cross*, Vol. 94, No. 885, 2012.

52 David Freestone, "The United Nations Framework Convention on Climate Change – The Basis for the Climate Change Regime", in Cinnamon P. Carlarne, Kevin R. Gray and Richard Tarasofsky (eds), *The Oxford Handbook of International Climate Change Law*, Oxford University Press, Oxford, 2016, p. 98.

53 United Nations Framework Convention on Climate Change, 9 May 1992 (entered into force 21 March 1994) (UNFCCC).

54 *Ibid.*, Art. 2.

55 UNFCCC, "Fact Sheet: The Need for Adaptation", available at: https://unfccc.int/files/press/backgrounders/application/pdf/press_factsh_adaptation.pdf.

56 Ian R. Noble *et al.*, "Adaptation Needs and Options", in Christopher B. Field *et al.* (eds), *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects*, Cambridge University Press, Cambridge, 2014, p. 844.

serve adaptation needs; and the delivery of specific services at the national, regional, and local levels".[57] Social options, meanwhile, "target the specific vulnerability of disadvantaged groups, including targeting vulnerability reduction and social inequities".[58] Finally, institutional options "range from economic instruments such as taxes, subsidies, and insurance arrangements to social policies and regulations" as well as laws and planning measures concerning, for example, protected areas.[59]

Under the UNFCCC, States Parties have agreed to "formulate, implement, publish and regularly update national … programmes containing … measures to facilitate adequate adaptation to climate change".[60] The UNFCCC's successor protocol, the 2015 Paris Agreement,[61] defines the goal of climate change adaptation more robustly.[62] Article 7(9) of the Paris Agreement, one of its few binding provisions,[63] provides that "[e]ach Party shall, as appropriate, engage in adaptation planning processes and the implementation of actions" including adaptation actions, undertakings and/or efforts; formulating and implementing national adaptation plans; assessing climate impacts and vulnerabilities; and building resilience of socioeconomic and ecological systems. Under Articles 7(10) and 7(11), States Parties should submit and update adaptation communications that include adaptation needs and actions taken.

Of course, critical questions arise as to whether this essential regime continues to apply in times of armed conflict, including belligerent occupation; and, if so, what (if any) obligations to adapt under the UNFCCC regime concretely apply to the Occupying Power in relation to the occupied territory. The last decade has witnessed remarkable developments toward a stronger recognition of the applicability of international environmental law (in general) during belligerent occupations.[64] The International Law Commission (ILC) concluded to the existence of a rebuttable presumption in favour of the applicability of this field of law, in the context of Draft Articles on the Effects of Armed Conflicts on Treaties.[65] The interaction between IHL and international environmental law was also at the core of the ILC's recent Draft Principles on Protection of the Environment in Relation to Armed Conflict (ILC Draft

57 *Ibid.*, p. 845.
58 *Ibid.*, p. 847.
59 *Ibid.*, p. 848.
60 UNFCCC, above note 53, Art. 4(1)(d).
61 Paris Agreement, 12 December 2015 (entered into force 4 November 2016).
62 *Ibid.*, Art. 2.
63 Daniel Bodansky, "The Legal Character of the Paris Agreement", *Review of European Comparative and International Environmental Law*, Vol. 25, No. 2, 2016.
64 Karen Hulme, "Armed Conflicts and Biodiversity", in Michael Bowman, Peter Davies and Edward Goodwin (eds), *Research Handbook on Biodiversity and Law*, Edward Elgar, Cheltenham, 2016, p. 261; Silja Vöneky, "A New Shield for the Environment: Peacetime Treaties as Legal Constraints of Wartime Damage", *Review of European Community and International Environmental Law*, Vol. 9, No. 1, 2000, p. 20.
65 ILC, Draft Articles on the Effects of Armed Conflicts on Treaties, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2011, UN Doc. A/66/10, Art. 7 and Annex.

Principles).[66] However, while there is a presumed continuity of environmental treaties in times of armed conflict, one must proceed on a case-by-case basis to assess the concrete applicability of such treaties. Some, such as the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, provide explicitly (or indirectly) for their continued application during armed conflict.[67] Others, such as the UNFCCC and the Paris Agreement, are silent on the matter.

The continued applicability of the obligations arising from the UNFCCC and the Paris Agreement can be assessed in light of the criteria outlined by the ILC in Articles 6 and 7 of its Draft Articles on the Effects of Armed Conflicts on Treaties, including their subject matter, content, object and purpose, the number of parties, and the specific features of the armed conflict, *in casu*, a prolonged occupation.[68] Considering all these criteria, there is a strong case to be made that the UNFCCC and Paris Agreement, as nearly universally ratified instruments designed to address "change in the Earth's climate and its adverse effects" as a "common concern of humankind",[69] apply in situations of prolonged occupation.[70] In this sense, in Vöneky's view, treaties that "protect a common good in the interest of the state community as a whole"[71] continue to apply during armed conflict, backing the continued applicability of the UNFCCC regime.

Yet, the fact that the international climate change regime continues to apply in times of occupation does not settle the matter at hand. The question remains as to what obligations under the UNFCCC regime apply to the Occupying Power *in relation to* the occupied territory and the local population. A "short-term road"[72] allowing us to conclude that the obligations arising from the international climate change regime are incumbent upon the Occupying Power lies within the law of occupation. The principle of continuity of the legal system could indeed serve as a "gateway" to binding the Occupying Power to the same climate obligations that bind the ousted government. The following section of this article delves into this path and the complexities it entails. Certain scholars appear to point to an alternative route, suggesting the existence of extraterritorial obligations under the

66 ILC, *Provisional Summary Record of the 3504th Meeting*, UN Doc. A/CN.4/SR.3504, 31 October 2019, p. 15. For the full text of the Draft Principles, with commentaries, see ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries*, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2022, UN Doc. A/77/10 (ILC Draft Principles).

67 Convention on Wetlands of International Importance especially as Waterfowl Habitat, 2 February 1971.

68 ILC, above note 65, Art. 6.

69 UNFCCC, above note 53, Preamble.

70 See, in this sense, Romina Edith Pezzot, "IHL in the Era of Climate Change: The Application of the UN Climate Change Regime to Belligerent Occupations", *International Review of the Red Cross*, Vol. 105, No. 923, 2023, pp. 1084–1087.

71 Silja Vöneky, "Peacetime Environmental Law as a Basis of State Responsibility for Environmental Damage Caused by War", in Jay E. Austin and Carl E. Bruch (eds), *The Environmental Consequences of War: Legal, Economic, and Scientific Perspectives*, Cambridge University Press, Cambridge, 2000, pp. 190, 211–212; S. Vöneky, above note 64, p. 20. On the difficulty of conceiving the "opting-out" of States from treaties regulating global interests, see Arnold N. Pronto, "The Effect of War on Law – What Happens to Their Treaties When States Go to War?", *Cambridge Journal of International and Comparative Law*, Vol. 2, No. 2, 2013, p. 231.

72 See R. E. Pezzot, above note 70, pp. 1079–1081.

UNFCCC regime.[73] A State's commitment to adaptation under the UNFCCC regime entails the obligation "to protect as far as it can the people and ecosystems *within its jurisdiction*".[74] One could draw an analogy with the extraterritorial human rights obligations triggered by an Occupying Power's effective control, or with States' obligation to prevent environmental harm on their territory or areas under their jurisdiction (arising from international environmental law[75]), to construe "jurisdiction" as including the occupied territory. Conversely, in a more restrictive view, it can be argued that the wording of the Paris Agreement indicates that adaptation action must be carried out at the domestic level and that, in the current state of the art, the international climate change regime does not easily lend itself to extraterritorial duties[76] as it is built on a "territorial-bounded-state paradigm".[77]

Climate change adaptation in prolonged occupations

Bearing in mind the parallel applicability of other bodies of rules, the author now seeks to unpack the potential of the law of occupation, and its main standards of protection, to safeguard the capacity of occupied populations to adapt to increasingly extreme weather events and their subsequent impacts on water and food security. Because occupation law does not address environmental issues, it is somewhat anachronistic in the face of modern challenges. Yet the author contends that it does provide safeguards in relation to climate change adaptation, through the obligations to ensure public order and safety of the local population and the rules on the management of property and natural resources, as well as a direct gateway to the applicability of climate obligations emanating from international climate change law.

Public order and safety of the local population

Article 43 of the Hague Regulations lays down two distinct obligations of conduct incumbent upon the Occupying Power:[78] it "shall take all steps in [its] power to

73 *Ibid.*, pp. 1081–1083; Lena Feji, "Climate Change and the Vulnerable Occupied Palestinian Territories", *UCLA Journal of Environmental Law and Policy*, Vol. 39, No. 1, 2021, p. 76; Marc Limon, "Human Rights Obligations and Accountability in the Face of Climate Change", *Georgia Journal of International and Comparative Law*, Vol. 38, 2010, p. 558.

74 Benoît Mayer, *The International Law on Climate Change*, Cambridge University Press, Cambridge, 2018, p. 166 (emphasis added).

75 R. E. Pezzot, above note 70, pp. 1081–1083. Pezzot argues that, through a harmonic interpretation of the Paris Agreement and the harm prevention principle, one can conclude to the extraterritorial application of the Paris Agreement. In this sense, "the Occupying Power would be responsible for controlling GHG [greenhouse gas] emissions from the occupied territory under its effective control (in order to avoid worsening the climate change situation), should take concrete actions to mitigate those GHG emissions and to protect the civil population from climate change during the occupation, and should include in its nationally determined contributions those GHGs produced in the occupied territory when that space is under its effective control".

76 Markus Vordermayer, "The Extraterritorial Applicability of Multilateral Environment Agreements", *Harvard International Law Journal*, Vol. 59, No. 1, 2018, p. 90.

77 Benjamin Kaplan Weinger, "Scripting Climate Futures: The Geographical Assumptions of Climate Planning", *Political Geography*, Vol. 88, 2021, p. 4.

78 Y. Dinstein, above note 35, p. 100.

restore and ensure, as far as possible, public order and safety, while respecting, unless absolutely prevented, the laws in force in the country". This section is dedicated to an analysis of the first set of obligations – that is, to "restore and ensure" public order and the safety of the local population – through the prism of climate change adaptation. Specifically, the paper considers how extreme weather events can disrupt public order and safety and explores concrete examples of measures that the Occupying Power should take to address these threats.

The authoritative French version of Article 43 sheds light on the meaning of "public order and safety". Translated from "l'ordre et la vie publics", public order and safety (or "civil life") respectively encompass the security and general safety of the population in the occupied territory and "the social functions and ordinary transactions that constitute daily life".[79] The obligation involves two sets of actions: "re-establishing public order and life, if disrupted ('rétablir'); and ensuring the continued existence of public order and life, if not ('assurer')".[80] It follows from the foregoing that the Occupying Power must not only reinstate the *status quo ante* in terms of the security, health and well-being of the population but must also actively seek to maintain it; to the greatest extent possible, it must refrain from engaging in activities that jeopardize the population's security or disturb "normal" life. It also implies that the Occupying Power must prevent such behaviours from third parties.[81] Complementary provisions of the Hague Regulations and GC IV refine the contours of the conducts that the Occupying Power must or, conversely, must not adopt.[82]

The duty to ensure public order and civil life must be "adjusted to changing social needs relating to security, economy, [and] health",[83] particularly in prolonged occupations. Arguably, "in some instances the [Occupying Power] is even obliged to enact legislation designed to 'ensure public order and civil life'".[84] The entangled issue of legislation-making by an Occupying Power is discussed in the following section; for the time being, questions pertaining to the concrete application of the obligation to "restore and ensure" to climate change adaptation will be addressed. In particular, the evolutive needs of occupied populations in the face of the climate crisis's growing repercussions will be considered. That global warming is leading to extreme weather events has become largely undeniable (even to the most sceptical); equally indisputable is the fact that the increasing severity and frequency of extreme weather events raises critical social, economic and security concerns for vulnerable communities, including populations in occupied

79 Tristan Ferraro, *Expert Meeting: Occupation and Other Forms of Administration of Foreign Territory*, ICRC, Geneva, 2012, p. 57; Yutaka Arai, *The Law of Occupation: Continuity and Change of International Humanitarian Law and Its Interaction with International Human Rights Law*, Vol. 2, Brill, Leiden, 2009, p. 96.

80 Y. Dinstein, above note 35, p. 101.

81 ICJ, *Armed Activities*, above note 49, para. 178.

82 Marco Sassòli, "Legislation and Maintenance of Public Order and Civil Life by Occupying Powers", *European Journal of International Law*, Vol. 16, No. 4, 2005, p. 664.

83 Y. Arai, above note 79, p. 98.

84 *Ibid.*, pp. 98–100, referring to Supreme Court of Israel, *Abu Aita et al. v. Commander of the Judea and Samaria Region et al.*, Case No. HCJ 69/81, 5 April 1983.

territories, posing threats to food and water security that are likely to be aggravated over time. When approaching the Occupying Power's obligation to "restore and ensure public order and safety", this article draws a line between the negative obligation not to hinder the local population's welfare and the positive obligation to take all measures reasonably possible to restore and/or ensure the "normal life" of the occupied population in light of the aforementioned climate risks.

For Dinstein, "the purpose of the first part of Hague Regulation 43 is to protect the civilian population from all acts of violence",[85] whether committed by the Occupying Power or by a third party. While acts of violence can be viewed as isolated actions, such as destruction of lands or property, this article suggests the adoption of a more comprehensive (yet creative) approach. If one considers that depriving a population of its means to cope with the effects of climate change embodies a form of "slow and structural violence",[86] it could arguably be inferred from Article 43 that the Occupying Power should not act in ways that impair adaptive capacity within the occupied territory or frustrate community-based adaptation efforts. Indeed, adaptive capacity comprises a "set of resources available for adaptation, as well as the ability or capacity … to use these resources effectively in the pursuit of adaptation".[87] To preserve this adaptive capacity in the face of increasing climate and weather extremes, environmental resilience and natural resource availability must not be endangered – especially via overexploitation and pollution – and the local population must not be denied access to essential resources.

Furthermore, construed under the general umbrella of Article 43 of the Hague Regulations, other restrictive provisions of IHL are most salient in the context of climate change adaptation. Of particular importance is the obligation enshrined in Article 54(2) of AP I, regarded as a customary rule of IHL.[88] It prohibits "attack[ing], destroy[ing], remov[ing] or render[ing] useless objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies and irrigation works". Water resources are critically important for human adaptive capacity in the face of climate change, and due to their acute sensitivity to global warming, these resources must therefore be managed cautiously.[89] Prohibited acts under Article 54(2) include demolishing water-related structures – whether they are used for drinking water or agricultural purposes, such as rainwater-harvesting ponds – and polluting drinking water sources.

85 Y. Dinstein, above note 35, p. 102.

86 E. Cusato, above note 5, p. 59.

87 Nick Brooks and W. Neil Adger, "Assessing and Enhancing Adaptive Capacity", in Bo Lim and Erika Spanger-Siegfried (eds), *Adaptation Policy Frameworks for Climate Change: Development Strategies, Policies, and Measures*, Cambridge University Press, Cambridge, 2005, p. 168.

88 Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005, p. 189, available at: https://ihl-databases.icrc.org/en/customary-ihl.

89 Jonathan Verschuuren, "Climate Change Adaptation and Water Law", in Jonathan Verschuuren (ed.), *Research Handbook on Climate Change Adaptation Law*, Edward Elgar, Cheltenham, 2013, pp. 251–252.

Practices by an Occupying Power that impede access to, or mismanage, water resources can severely impact the adaptive capacity of occupied populations. Such practices would surely run counter to Article 43 of the Hague Regulation and possibly Article 54(2) of AP I. However, the latter includes a caveat: destroying or rendering useless resources essential to the population's survival must be done with "the specific purpose of denying them for their sustenance value". This additional requirement may prove challenging to meet in practice as it implies that such actions would not be illegal if conducted in the name of military necessity.[90]

In addition, even if one is not convinced by the extraterritorial application of the obligations imposed by the international climate change regime upon the Occupying Power, referring to the fundamental principles of *pacta sunt servanda* and good faith under the Vienna Convention on the Law of Treaties may provide a possible route for the regime to influence the Occupying Power's conduct.[91] One could argue that the Occupying Power, while remaining bound by its own obligations under the UNFCCC regime, should not act in a way (except if justified under IHL) that contradicts the object and purpose of the treaties that it has ratified and the expectations thereof.[92] Under this view, one could make the claim that States have "an obligation not to interfere with other States in the implementation of their own … obligations",[93] derived from the principle of good faith, which would apply to an Occupying Power. It could be advocated that by curtailing the occupied State's capability to adapt, as well as the local and national adaptation efforts implemented (thus further degrading another State Party's climate resilience), an Occupying Power would be deliberately frustrating the spirit of the treaties.[94]

Beyond the negative obligation outlined above, the Occupying Power also bears a duty to take necessary measures to meet the evolving needs of the local population, which arguably comprises the adoption of adaptation measures and strategies. This duty becomes increasingly important as the period of occupation lengthens.[95] The degree of positive actions that ought to be taken will equally depend on the Occupying Power's "level of control" and "the constraints and the resources available".[96] As the ICRC has pointed out, adapting to climate change

90 Karen Hulme, "Climate Change and International Humanitarian Law", in Rosemary Rayfuse and Shirley V. Scott (eds), *International Law in the Era of Climate Change*, Edward Elgar, Cheltenham, 2012, p. 211.

91 Vienna Convention on the Law of Treaties, 23 May 1969 (entered into force on 27 January 1980), Art. 26.

92 See ICJ, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Judgment, *ICJ Reports 1986*, pp. 135 ff.; Robert Kolb, "Principles as Sources of International Law", *Netherlands International Law Review*, Vol. 53, No. 1, 2006, p. 18.

93 John H. Knox, "Human Rights Principles and Climate Change", in C. P. Carlarne, K. R. Gray and R. Tarasofsky (eds), above note 52, p. 230.

94 ICJ, *Nicaragua*, above note 92, para. 275.

95 Michael Siegrist, *The Functional Beginning of Belligerent Occupation*, Graduate Institute Publications, Geneva, 2011.

96 Hans-Joachim Heintze, "Protection of the Environment and International Humanitarian Law", in Centre of Analysis of International Relations, *Neglected Victim of the Armenia-Azerbaijan Conflict: Environmental Impacts of Occupation*, Baku, 2020, p. 20.

"can be relatively simple … but it may also require major social, cultural, or economic changes".[97] As previously mentioned, climate adaptation measures can intervene at different levels and can take various shapes, and depending on the level and shape in question, the measures that an Occupying Power may adopt will be restricted to a greater or lesser extent by the law of occupation.

In the context of this article, efforts to ensure food and water security in the face of increasingly frequent and severe extreme weather events can take many different forms, ranging from providing information on climate risks and rebuilding essential facilities, such as dykes and dams, to adopting or modifying policy and legislative frameworks (the latter being the trickiest in the context of belligerent occupation, as developed below). The Occupying Power could be required to adopt policy or legislative measures aimed at protecting crucial natural resources – such as aquifers, fisheries, forests and agricultural land – as well as developing disaster preparedness and response plans for floods, droughts and other natural disasters, and water management plans.

Against this backdrop, two questions emerge: first, whether the Occupying Power is authorized to undertake long-term or far-reaching policy or legislative measures to ensure the local population's adaptation to climate extremes; and, second, whether the positive actions mandated by Article 43 encompass preventive measures, including those aimed at safeguarding the interests of future generations.

On the first question, which will be dealt with in greater depth below, the Israeli Supreme Court's jurisprudence provides some guidance. Starting from the premise that the Occupying Power's duties must be exercised in a manner similar to that of a modern State, the Court has held that, in a long-term occupation, investments and projects that have lasting implications beyond the occupation period are permissible so long as they are designed to benefit the local population.[98] Accordingly, provided that the adaptation project is implemented in order to improve the population's well-being, it could be deemed legitimate. But caution is warranted: in the absence of a centralized control mechanism under IHL as to what constitutes a "legitimate" measure, one could argue that the adoption of such measures would further consolidate the occupation – running counter to its indented temporary nature – and ultimately serve the Occupying Power's interests. In this sense, Azerbaijan, which was partly occupied by Armenia for over two decades, emphasized during the Sixth Committee of the UN General Assembly's discussions on the ILC Draft Principles that an Occupying Power cannot justify carrying out significant transformations in the occupied territory under the pretence of environmental protection.[99]

As regards the second question, insights can be found in the ILC Draft Principles, Principle 19(2) of which states:

97 ICRC, above note 22, p. 18.

98 David Kretzmer, "The Law of Belligerent Occupation in the Supreme Court of Israel", *International Review of the Red Cross*, Vol. 94, No. 885, 2012, p. 220.

99 UN General Assembly, *Couverture des reunions: La protection de l'environnement dans les conflits armés anime les débats de la Sixième Commission*, UN Doc. AG/J/3610, 5 November 2019.

> An Occupying Power shall take appropriate measures to prevent significant harm to the environment of the occupied territory, including harm that is likely to prejudice the health and well-being of protected persons of the occupied territory or otherwise violate their rights.[100]

The commentary to Principle 19(2), in keeping with the principle of intergenerational equity, states that protection must be afforded to both present and future generations.[101] Hence, promoting an evolutive interpretation of Article 43 of the Hague Regulations, Principle 19(2) arguably entails an obligation for the Occupying Power to adopt preventive adaptation strategies with the view of safeguarding the health and well-being of the present and future local populations, which are threatened by the current and foreseeable impacts of rising extreme weather events.[102] It is indeed well established that the increasing frequency and severity of such events jeopardize the productivity of agricultural lands, and thus food safety. Additionally, these events adversely impact water security and health, as pointed out in a recent report on the linkages between climate change and health issues in the occupied Palestinian territories produced by the World Health Organization.[103]

Now, it should be highlighted that the very notion of "health and well-being" must be construed in light of international human rights law. As put forward in the commentary to Principle 19(2), the notion "refers to the common objectives of economic, social and cultural rights, such as the right to health".[104] Not only are socioeconomic rights often of the greatest concern[105] during occupations, but they are also considered among the most endangered by climate change.[106] The commentary to Principle 19(2) is in line with the jurisprudence of the International Court of Justice (ICJ), which has held that the obligations of an Occupying Power under Article 43 incorporate the obligation to ensure respect for international human rights, thereby bridging the two bodies of law.[107] International human rights monitoring bodies have progressively recognized that States must "protect against foreseeable environmental impairment of human rights";[108] significantly, the United Nations (UN) Human Rights Council has established that "each State has an obligation to protect those within its jurisdiction from the harmful effects of climate change".[109] Given that the

100 ILC Draft Principles, above note 66, p. 158.

101 *Ibid.*, pp. 161–162.

102 ILC, above note 49, pp. 24–25: in her first report, Special Rapporteur Marja Letho referred to the need for the Occupying Power to adopt some "forward-looking action" to "ensure the well-being of the population".

103 World Health Organization and UNFCCC, *Occupied Palestinian Territory: Health and Climate Change Profile 2022*, 2022 available at: https://apps.who.int/iris/bitstream/handle/10665/352629/WHO-HEP-ECH-CCH-22.01.04-eng.pdf?sequence=1.

104 ILC Draft Principles, above note 66, p. 161.

105 N. Lubell, above note 51, p. 330.

106 Erik V. Koppe, "Climate Change and Human Security during Armed Conflicts", *Human Rights and International Legal Discourse*, Vol. 8, No. 1, 2014, p. 78.

107 ICJ, *Armed Activities*, above note 49, para. 178.

108 HRC, *Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy, and Sustainable Environment*, UN Doc., A/HRC/31/52, 1 February 2016, para. 37.

109 *Ibid.*, para. 68.

occupied population is under the Occupying Power's effective control, it is the author's view that the latter should be considered obligated to take preventive measures towards climate-related hazards in the occupied territory, in order to safeguard human rights. It is, however, worth noting that several States have exhibited resistance towards Principle 19(2). While not rejecting *ipso facto* the relevance of the principle, Israel has expressed concerns that it "erroneously conflates different and distinct legal rules, and relies on non-legal notions, instead of focusing on the law of belligerent occupation".[110]

Ultimately, throughout this section, the present paper argues that Article 43 of the Hague Regulations, read in conjunction with other specific rules of IHL such as Article 54 of AP I, is critical for addressing climate change adaptation in situations of prolonged occupation. While there may be more immediate (or visible) threats to the security and well-being of occupied populations than climate change, the author contends that human security must be reframed in a comprehensive, long-term risk perspective.[111] Dangerous climate change, coupled with fragile environments, is a safety concern for occupied populations, and adaptation efforts are thus essential to meet their changing needs.

Consequently, it is the author's view that, as far as (realistically) possible, the Occupying Power must not only refrain from negatively impacting local populations' adaptive capacity but should also take active steps to implement adaptation measures in their best interest. These measures could include conducting assessments of the occupied territory's risks and vulnerabilities to extreme weather events, implementing early warning systems, and adopting changes in water management and exploitation of natural resources essential to the population's survival so as to maximize their resilience. In some cases, adaptation may require much larger social and economic changes or infrastructure projects (for example, in the face of sea level rise). It is debatable whether these would fall within the Occupying Power's responsibility (especially from a preventive standpoint); the ILC's progressive interpretation may support, to a certain extent, a favourable response, but it also carries the risk of granting the Occupying Power carte blanche to build programmes that serve its interests, disguised under a mantle of virtue. According to some scholars, the participation of the local population in decision-making would be a salient indicator of the genuineness (or lack thereof) of an Occupying Power's positive actions.[112]

Respect for the laws of the occupied territory

The Occupying Power's second general obligation, as per Article 43 of the Hague Regulations, is that of "respecting, unless absolutely prevented, the laws in force

110 Israel, "Comments from the State of Israel on the International Law Commission's *Draft Principles on the Protection of the Environment in Relation to Armed Conflicts* as Adopted by the Commission in 2019", 2020, p. 24.

111 See ICRC, "Gaza: On the Frontlines of Climate Change", 7 April 2022, available at: www.icrc.org/en/document/gaza-frontlines-climate-change.

112 T. Ferraro, above note 79, p. 13; E. Benvenisti, above note 37, p. 247.

in the country". This negative duty is a cornerstone of occupation law, embodying the so-called "conservationist principle", or principle of continuity of the legal system. It mandates the Occupying Power to maintain the legal *status quo ante bellum* in the occupied territory. The raison d'être of this principle is to ensure that the occupation remains a "provisional state of affairs",[113] thereby preserving the ousted government's sovereignty.

The "laws in force" that the Occupying Power is bound to respect are only those which were already in force at the start of the occupation.[114] While the ousted government "has the full right to continue to legislate for the occupied territory even after the occupation begins …, for its part, the occupant is not bound to respect any laws enacted by the displaced sovereign during the occupation".[115] In this regard, two scenarios can be distinguished.

A first plausible scenario is one in which the ousted government enacted national climate change laws prior to the occupation. While factoring the practical realities of belligerent occupations into the equation, it can be considered that the Occupying Power would generally be obligated in such cases to respect and uphold climate change laws (be they national or municipal laws, executive orders, ordinances, or decrees) unless they conflict with its obligations under international law or security concerns. According to this line of thought, as noted above, the principle of continuity of the legal system would equally serve as a gateway to binding the Occupying Power to the same international climate obligations that bind the ousted government, considering that the multilateral environmental treaties ratified by the latter are arguably part of the laws in force in the occupied territory.[116] The phrase "the laws in force" has indeed been understood to include multilateral conventions binding on the occupied State, thus forming a source of obligation for the Occupying Power.[117]

In light of the foregoing, the Occupying Power could potentially be bound by the pledges inserted in the Nationally Determined Contributions and National Adaptation Plans adopted by the ousted government in accordance with the Paris Agreement, insofar as they would be formulated in sufficiently binding terms. It might also be claimed that the obligation of conduct to adequately assess climate impacts and vulnerabilities, and to plan and implement mitigation and adaptation efforts in the occupied territory, would rest upon the Occupying Power. That said, the aforementioned climate obligations seemingly falling on the Occupying Power are not without their share of adverse and discursive implications, as discussed below.

Under a second scenario, the temporality of the conservationist principle could pose a significant issue. In some ongoing prolonged occupations, the period

113 Hanne Cuyckens, "The Law of Occupation", in Jan Wouters, Philippe De Man and Nele Verlinden, *Armed Conflicts and the Law*, Intersentia, Cambridge, 2016, p. 440.
114 M. Sassòli, above note 82, p. 668; Y. Dinstein, above note 35, p. 119.
115 Y. Dinstein, above note 35, p. 119.
116 ILC Draft Articles, above note 66, p. 164 fn. 770.
117 Theodor Meron, "Applicability of Multilateral Conventions to Occupied Territories", *American Journal of International Law*, Vol. 72, No. 3, 1978.

of occupation pre-dates the regulation of climate change. Consequently, the negative obligation stipulated by Article 43 of the Hague Regulations would not extend to the new climate laws and regulations enacted by the ousted government, often in accordance with the international climate change regime. In essence, this scenario may freeze the occupied territory in a normative space in which climate change does not exist, and thus prevent adaptation in the face of changing circumstances.

Despite its apparent rigidity, Article 43 nevertheless allows for some wiggle room, as the laws in force must be respected "unless absolutely prevented". This exception is typically understood to be informed by Article 64 of GC IV,[118] which authorizes the Occupying Power to legislate in exceptional circumstances, including threats to its security or to the maintenance of public order (an "orderly government"), as well as in cases of impediments to the application of GC IV (and, by extension, of other binding instruments of IHL).[119] Additionally, the Occupying Power may revise legislation that contravenes international human rights law standards[120] and may sometimes legislate if necessary to ensure the security and "normal life" of the local population.[121]

As previously mentioned, scholarly discussions have suggested broadening the restricted legislative power of the Occupying Power in prolonged occupations. For Dinstein,

> [t]he longer the occupation lasts, the more compelling the need to weigh the merits of a whole gamut of novel legislative measures designed to ensure that societal needs in the occupied territory do not remain too long in a legal limbo.[122]

Following this logic, and in light of the need to comply with its obligations under occupation law as well as to maintain an "orderly government", one could argue that the Occupying Power should be enabled (if not required) to adopt the necessary legislative underpinnings for the adaptation of the local population to the risks posed by increasing extreme weather events and natural disasters, particularly to food and water security. Such measures might also be required to ensure the security of the Occupying Power's armed forces stationed in the occupied territory.[123] To reduce vulnerability to such threats, the adoption or revision of existing legal frameworks regulating the management, protection and sustainable usage of water resources could, in particular, prove essential. Questions related to the sustainable exploitation of water and other essential natural resources are explored in the following part of this article.

Hence, this article argues that, in prolonged occupations especially, changes in public policies and the adoption of reasonable measures on climate change

118 M. Sassòli, above note 82, pp. 669–670; Y. Dinstein, above note 35, p. 121.
119 Y. Dinstein, above note 35, p. 121.
120 M. Sassòli, above note 82, p. 676.
121 Y. Dinstein, above note 35, p. 127; T. Ferraro, above note 79, p. 58.
122 Y. Dinstein, above note 35, p. 128; see also A. Roberts, above note 42, p. 52.
123 R. E. Pezzot, above note 70, pp. 1080–1081.

adaptation would, to a certain extent, be required for the Occupying Power to comply with its obligation to restore and ensure public order and civil life as well as in accordance with the climate obligations in force in the occupied territory. Climate change adaptation might take the form of "soft" measures, such as the implementation of risk and vulnerability assessments, early warning systems, and awareness-raising on water consumption. Among other things, it could also involve ecosystem-based measures, such as the restoration of wetlands or the designation of protected areas, as well as physical measures, such as the construction of flood and cyclone shelters. Provided they are adopted with a view to enhancing the welfare and responding to the changing needs of the local population, the adoption of such measures by the Occupying Power would be in line with the conservationist principle. They could thus be adopted where needed in the occupied territory based on an assessment made *proprio motu* by the Occupying Power or in line with the occupied State's existing climate laws and policies.

In some cases, however, adaptation to adverse climate impacts would require substantial and far-reaching social and economic changes at the national level – changes to which the occupied State might or might not have pledged itself before the start of the occupation. The question is, in theory, would the adoption of such "transformative"[124] measures by the Occupying Power be lawful under occupation law? In line with the arguments developed in relation to so-called "transformative" occupations[125] – aimed at bringing about democratic changes within the occupied territory – one could argue that large-scale transformations towards climate change adaptation and mitigation would be permitted, particularly in the name of human rights (including that to a healthy environment). The very notion of "transformative occupation" is highly controversial[126] and pleading, by analogy, in favour of such transformative measures is not without ethical quandaries. It should notably be recalled that not all States have the same capacity to adopt far-reaching adaptation measures – so, what if the partially or fully occupied State is a developing or least-developed State for which such measures would jeopardize overall economic development?

Generally speaking, it must be stressed (yet again) that arguing in favour of extended legislative powers of the Occupying Power always bears the risk of conferring the illusion of sovereignty upon the latter. A balancing act must thus imperatively be struck between the exceptional and temporary character of belligerent occupation and the pressing need to shield local populations from climate risks and to protect Earth's climate system. The legality of each piece of legislation adopted by the Occupying Power – no matter how "climate-friendly" – should be scrutinized thoroughly, as "[p]rofessed humanitarian [and,

124 See the notion of "transformational adaptation" in Mariya Gancheva, Sarah O'Brien, Tugce Tugran and Camille Borrett, *Adapting to Climate Change: Challenges and Opportunities for EU Local and Regional Authorities*, European Committee of the Regions, 2020.

125 Adam Roberts, "Transformative Military Occupation: Applying the Law of War and Human Rights", *American Journal of International Law*, Vol. 100, No. 3, 2006.

126 T. Ferraro, above note 79, p. 67.

in this case, environmental] motives of the Occupying Power may serve as a ruse for a hidden agenda".[127] In this regard, the participation and consent of the local population might be crucial. It has, for example, been argued that prior approval of the local population would be required to designate new conservation areas in occupied territories.[128] This would be consistent with Article 7(5) of the Paris Agreement, which states that adaptation measures must be "guided by … traditional knowledge, knowledge of indigenous peoples and local knowledge systems".

Finally, it is noteworthy that legislation which undermines the climate resilience of the local population and the environment may be enacted in the interest of the Occupying Power's security. One example of this is the creation of military zones,[129] which can exacerbate the impacts of climate change on local communities by restricting their access to essential natural resources. Other examples involve decisions related to the construction of military infrastructure, which can have negative impacts on the environment, including deforestation, soil erosion and loss of biodiversity. These detrimental consequences can lead to reduced environmental resilience and, consequently, decreased resilience of the local population to cope with changing weather patterns and increasing climate extremes.

Management of property and natural resources

The rising severity and frequency of climate-related extreme weather events deeply impacts the availability and quality of natural resources and ecosystem services, as stated above.[130] In addition to supporting the basic needs of occupied populations, natural resources and ecosystem services can exert functions such as carbon sequestration and disaster relief,[131] thus providing crucial defence lines for climate change mitigation and adaptation. Their protection therefore stands as an essential weapon against the climate crisis and its harsh consequences.

Against this backdrop, climate resilience in occupied territories is likely to be directly protected by the provisions of the law of occupation governing the management of property and natural resources. The main provision in this regard, and the epicentre of the present analysis, is Article 55 of the Hague Regulations. It grants the Occupying Power with a limited "usufructuary" status

127 Yoram Dinstein, *The Dilemmas Relating to Legislation under Article 43 of the Hague Regulations and Peace-Building*, Background Paper prepared for Informal High-Level Expert Meeting on Current Challenges to International Humanitarian Law, Cambridge, MA, 25–27 June 2004, p. 8.

128 K. Hulme, above note 25, p. 240.

129 Jean Pictet (ed.), *Commentary on the Geneva Conventions of 12 August 1949*, Vol. 4: *Geneva Convention relative to the Protection of Civilian Persons in Time of War*, ICRC, Geneva, 1958, p. 207.

130 Shardul Agrawala *et al.*, "Climate Change and Natural Resource Management", in OECD, *Bridge Over Troubled Waters: Linking Climate Change and Development*, OECD Publishing, Paris, 2006.

131 John E. Gross, Stephen Woodley, Leigh A. Welling and James E. M. Watson (eds), *Adapting to Climate Change: Guidance for Protected Area Managers and Planners*, IUCN Best Practices Protected Areas Guidelines Series No. 24, Gland, 2016, p. 96.

over immovable public property – such as *in situ* natural resources.[132] Additionally, and although not discussed in more detail here, it is noteworthy that natural resources are further protected by the prohibition on destruction or seizure of property (unless absolutely necessary for military purposes)[133] and the prohibition on pillage.[134]

As per Article 55, the usufructuary status grants the Occupying Power the right to exploit natural resources, subject to the condition that it safeguards the resources' capital and does not use them for its own domestic purposes.[135] The exploitation of natural resources must be carried out with a view to ensuring the needs of the occupied population or military necessities.[136] Within the context of its Draft Principles, the ILC has interpreted the Occupying Power's usufructuary status in a progressive fashion, relying on the concept of sustainable development – a crucial tenet of international environmental law.[137] Principle 20 reads as follows:

> To the extent that an Occupying Power is permitted to administer and use the natural resources in an occupied territory, for the benefit of the protected population of the occupied territory and for other lawful purposes under the law of armed conflict, it shall do so in a way that ensures their sustainable use and minimizes harm to the environment.[138]

At its core, sustainable development is concerned with achieving "environmentally sound socio-economic development".[139] Following the ILC's construction of Article 55 of the Hague Regulations, the Occupying Power is required to exert its exploitation right towards natural resources with caution, taking into account regeneration limits and thereby seeking to prevent, minimize and remedy potential environmental damages.[140] While it was embraced by various States,[141] the evolutive interpretation of Article 55 – as drawing upon the concept of sustainable development – was forcefully rejected by others, such as Israel. The latter suggested deleting the references to sustainable use, considering that the phrase "is not a recognized legal term in this context and its precise content lacks certainty".[142]

132 Daniëlla Dam-de Jong, *International Law and Governance of Natural Resources in Conflict and Post-Conflict Situations*, Cambridge University Press, Cambridge, 2015, p. 217.
133 Hague Regulations, above note 32, Art. 23(g); GC IV, Art. 53.
134 Hague Regulations, above note 32, Art. 47; GC IV, Art. 33(2).
135 ILC Draft Articles, above note 66, p. 167.
136 Israel appears to have contested such restrictions: see Ministry of Foreign Affairs of Israel, "Memorandum of Law on the Right to Develop New Oil Fields in Sinai and the Gulf of Suez", reproduced in *International Legal Materials*, Vol. 17, No. 2, 1978, p. 432.
137 ILC, above note 49, p. 54.
138 ILC Draft Articles, above note 66, p. 166.
139 Onita Das, *Environmental Protection, Security and Armed Conflict: A Sustainable Development Perspective*, Edward Elgar, Cheltenham, 2013, p. 63.
140 *Ibid.*, p. 64.
141 See, *inter alia*, Netherlands, *Advisory Report on the ILC's Draft Principles on Protection of the Environment in Relation to Armed Conflicts*, June 2020, p. 1.
142 Israel, above note 110, pp. 25–28.

As stated above, to safeguard climate resilience and adaptive capacity in occupied territories, water resources in particular must be subject to equitable and efficient use by Occupying Powers. Given that groundwater resources are critical for water supply and irrigation, their preservation therefore plays an instrumental role in ensuring food and water security for occupied populations in the face of climate change's growing effects. Of course, groundwaters are equally impacted by increasing climate extremes, such as intense periods of drought and flooding. Hence, it is all the more important that the adverse consequences of climate change on water resources are factored into the exploitative activities of the Occupying Power. Linking this back to the above discussion on positive actions under Article 43 of the Hague Regulations, factoring climate considerations into resource exploitation (solely for the benefit of the local population or military necessities) could entail engaging in comprehensive groundwater monitoring and data collection to understand the current state of groundwater resources, assess climate vulnerabilities and make informed decisions regarding management and exploitation. In parallel to preventing over-pumping and depletion of aquifers, Occupying Powers should also promote the protection and conservation of groundwater recharge areas, such as wetlands, rivers and lakes, which play a major role in replenishing groundwater resources.

Other natural resources, such as soil, forests, and coastal and marine ecosystems, are equally crucial in mitigating and adapting to the effects of climate change and ensuring food and water security. Apart from supporting food production and regulating water cycles, natural resources offer important ecosystem services such as carbon sequestration, erosion control and habitat provision; thus, their harvesting demands heightened prudence. While Article 55 of the Hague Regulations authorizes the Occupying Power to enjoy the proceeds of these resources, their capital must be safeguarded against abusive exploitation.[143]

Besides (and in conjunction with) sustainable development, the ILC posits that the principle of permanent sovereignty over natural resources and the principle of self-determination also have a bearing on the construction of Article 55 of the Hague Regulations[144] – both corpora of rules should "strengthen and reinforce

143 For an example of alleged unsustainable practice of forestry exploitation, see Azerbaijan's claim that Armenia's occupation has caused intensive deforestation in the formerly occupied Nagorno Karabakh region, with, according to the former's assertions, "[t]housands of hectares of forests … cut due to exploitation of new mines": Azercosmos and Ministry of Foreign Affairs of the Republic of Azerbaijan, *Illegal Activities in the Territories of Azerbaijan under Armenia's Occupation: Evidence from Satellite Imagery*, 2019, p. 89; Ministry of Foreign Affairs of the Republic of Azerbaijan, *Illegal Economic and Other Activities in the Occupied Territories of Azerbaijan*, 2016, pp. 82–84. See also the allegations of abusive exploitation of fisheries by Morocco in the waters of Western Sahara: Sahrawi Arab Democratic Republic, First Indicative Nationally Determined Contribution, 2021, pp. 30–31; Thilo Marauhn and Barry de Vries, "Natural Resources in Times of Occupation", in Michael L. Fremuth, Jörn Griebel and Robert Heinsch (eds), *Natural Resources and International Law: Developments and Challenges: A Liber Amicorum in Honour of Stephen Hobe*, Nomos, Baden-Baden, 2022, pp. 70–71.

144 ILC Draft Articles, above note 66, p. 167. See also UNGA Res. 76/225, "Permanent Sovereignty of the Palestinian People in the Occupied Palestinian Territory, including East Jerusalem, and of the Arab Population in the Occupied Syrian Golan over Their Natural Resources", 11 January 2022, paras 2–3: the UN General Assembly, recalling the permanent sovereignty of Palestinians over their natural resources, demanded that Israel "cease the exploitation, damage, cause of loss or depletion and

each other".[145] When factoring in the consequences of climate change and rising climate extremes, such interaction bolsters the argument that an Occupying Power must exert its usufructuary status with great circumspection and consider the local population's long-term subsistence in the face of increasing climate vulnerabilities. Thus, in carrying out its duty to safeguard the occupied territory's resource capital, the Occupying Power must consider the effects that climate extremes have on the faculty of local populations to freely dispose of their increasingly vulnerable natural resources. Terminating the occupation is certainly the ultimate means of respecting the above-mentioned principles and hence for local populations to regain their full capacity to implement climate adaptation strategies. Unfortunately, however, the repercussions of climate change do not wait and require immediate attention – and, factually speaking, the occupied regime might not always be in a better position than the Occupying Power to adopt the required climate measures.

All in all, the protection of natural resources is of tremendous importance both for climate change adaptation and for food and water security, which is likely to be under considerable strain in the future. Given that climate change already does – and will increasingly – alter the capital of occupied territories' natural resources, Occupying Powers should adjust their exploitation practices, particularly in prolonged occupations, to (preventively) integrate this adverse climate dimension. In this regard, Article 55 of the Hague Regulations is an instrumental provision.[146] It can arguably be construed through a climate lens – especially when combined with the Occupying Power's other general duties, as discussed above – to address adaptation concerns in the face of rising climate extremes, offering protection to natural resources with a view to ensuring the evolving needs of the local population.[147] Indeed, the ILC's use of the sustainable development concept as a lens for interpreting Article 55 is a positive and necessary development in the law. While the legal status of sustainable development is subject to controversy,[148] it nevertheless offers an overarching umbrella under which the Occupying Power's obligations of natural resource management can be revisited, in light of the current climate crisis.

Concluding remarks

Climate change is a global challenge that threatens people all around the world, but it disproportionately impacts those who are unable to defend themselves from its

endangerment of the natural resources" of the occupied Palestinian territory and recognized the right of the occupied population to claim restitution for any of those acts. Significantly, it stated that Israel's practices leading to environmental degradation and depletion of natural resources impact the realization of the Sustainable Developments Goals.

145 UN General Assembly, *Report of the Secretary-General: Implications under International Law of the United Nations Resolutions on Permanent Sovereignty over Natural Resources on the Occupied Palestinian and Other Arab Territories and on the Obligations of Israel Concerning Its Conduct in These Territories*, UN Doc. A/38/265, 21 June 1983, para. 47.

146 S. Jarrar, above note 2, p. 53.

147 See K. Hulme, above note 90, p. 209.

148 Virginie Barral, "Sustainable Development in International Law: Nature and Operation of an Evolutive Legal Norm", *European Journal of International Law*, Vol. 23, No. 2, 2012, pp. 283 ff.

effects. Conflict-affected communities stand out as being among the most vulnerable, facing the dual strike of armed violence or foreign oppression and the slow and structural violence of an environment that progressively transforms into an enemy. As the need for gradual (yet urgent) adaptation to climate change grows, the ICRC has rightfully pointed out that "[s]imply waiting for conflicts and instability to be over to support people's adaptation is not an option. Such an approach would leave people in limbo for decades, and in deteriorating conditions, as risks keep growing and assets are progressively depleted."[149]

In light of the serious human rights violations all too frequently endured by populations under belligerent occupation, the impact of climate change may understandably not be considered a primary concern. However, it must be brought to the fore that climate vulnerability adds another brick to the wall that stands between occupied populations and the effective realization and enjoyment of their most fundamental rights. This article sheds light on the intricate issues that arise at the intersection between prolonged occupations and climate change adaptation, and reflects on the obligations of an Occupying Power in this context under the law of occupation – read in conjunction with the relevant rules of its neighbouring regimes.

The law of occupation was originally envisioned as a set of rules aimed at temporarily preserving the interests of the Occupying Power, the ousted government, and the local population of the occupied territory. Over time, the interests meant to be safeguarded have changed and the reality of modern-day occupations has put occupation law under strain.[150] In this sense, the applicable rules have been criticized for being outdated.[151] Yet it is argued here that the intrinsic flexibility of this specialized regime of law, as well as its evolving interpretation, secures its continued relevance in the face of new challenges such as climate change. The law of occupation requires that "the Occupying Power [strives] to ensure that the occupied population is protected from sources of significant environmental harm",[152] namely climate change and extreme weather events, while at the same time providing boundaries to the extent of such protection.

Both the obligation to restore and ensure public order and "civil life" within the occupied territory and the rules applicable to the exploitation of natural resources are critical safeguards for securing the adaptive capacity of the occupied territory and its local population, faced with the threat of extreme weather events and their impact on food and water security. While the relevant provisions certainly ought to be "fleshed out" in light of the Occupying Power's complementary human rights and environmental obligations, the law of

149 ICRC, above note 22, p. 39.

150 T. Ferraro, above note 79, p. 55.

151 Martti Koskenniemi, "Occupied Zone – 'a Zone of Reasonableness'?", *Israel Law Review*, Vol. 41, 2008, p. 29.

152 Michael Mason, "The Application of Warfare Ecology to Belligerent Occupations", in Gary Machlis, Thor Hanson, Zdravko Špirić and Jean McKendry (eds), *Warfare Ecology: A New Synthesis for Peace and Security*, Springer, Dordrecht, 2011, p. 170.

occupation – as a "droit de l'urgence"[153] – offers an adequate skeleton of duties for an Occupying Power not to aggravate and, to a certain extent, to take positive action to respond to the urgency of the local population's climate vulnerability. Furthermore, through its conservationist principle, the law of occupation provides a pathway for climate laws and international climate change obligations to apply to the Occupying Power, provided that they were in force at the outset of the occupation.

This article hopes to illustrate the paramount importance of its subject matter and the usefulness of adopting a progressive interpretation of occupation law to address climate vulnerability of local populations. Yet, two warnings are in order. The first mandates maintaining a realistic approach to an Occupying Power's duties, especially when it comes to environmental issues. Arguably, "the onerous obligations involved [in the law of occupation] have prevented modern-day [Occupying Powers] from acknowledging their status as such",[154] and adding to these obligations by articulating duties towards the local population's adaptation to climate change might be perceived as a vain endeavour by some.

A second significant caveat is that such an evolutive interpretation might bear the risk of granting the Occupying Power the semblance of a permanent sovereign over the occupied territory, thus clashing with the fundamentally temporary nature of occupation. In the absence of control mechanisms under IHL for assessing the legitimacy of the Occupying Power's policy-making and legislative measures within the occupied territory, the consultation and consent of the local population should arguably constitute the litmus test.[155] Swinging between the rigidity and flexibility of occupation law, this article has attempted to strike a balance between the need to shield populations in belligerent occupation from adaptive stagnation and the importance of not blurring the line between occupation and sovereignty.

In this regard, the article cannot escape the tension inherent to its very object of inquiry, disclaimed at the outset of the analysis. The obvious danger in promoting climate change adaptation duties for Occupying Powers – beyond the negative duty not to impair existing adaptation efforts – lies in seemingly consolidating occupations instead of calling for their end. It must be acknowledged that climate-related actions of Occupying Powers indeed bear the risk of being instrumentalized to shape sovereignty claims over occupied territories, and such actions are not without rhetorical implications. In this sense, Russia's reporting of greenhouse gas emissions in occupied Crimea has been condemned by Ukraine as an attempt to "legalize" the occupation.[156] As put

153 Robert Kolb and Sylvain Vité, *La protection des populations civiles soumises au pouvoir d'une armée étrangère*, Bruylant, Brussels, 2008, p. 114.

154 Emilia Pabian, "Prolonged Occupation and Exploitation of Natural Resources: A Focus on Natural Gas off the Coast of Northern Cyprus", *Journal of International Humanitarian Studies*, Vol. 12, No. 1, 2021, p. 109.

155 T. Ferraro, above note 79, pp. 75–76.

156 Natalie Sauer, "Russia-Ukraine Dispute over Crimea Spills into UN Climate Forum", *Climate Home News*, 7 January 2021, available at: www.climatechangenews.com/2021/01/07/russia-ukraine-dispute-crimea-spills-un-climate-forum/.

forward by Weinger, climate reports arguably constitute discursive constructions that replicate and somehow legitimate Occupying Powers' claims over occupied territories by, for instance, aggregating the latter into their own territory.[157] Here appears the Gordian knot. On the one hand, occupation renders the task of reporting climate data and taking actions in the territory arduous for the occupied State; for instance, both Georgia and Ukraine have stated that their reports on greenhouse gas emissions and mitigation efforts did not include Russian-occupied territories due to their lack of effective control, which rendered access to information difficult or impossible.[158] On the other hand, climate action by an Occupying Power is likely to be perceived as an attempt to normalize the occupation.

On a deeper level of analysis, this raises convoluted questions pertaining to the hypothetical repercussions of an Occupying Power's long-term maladaptive and "anti-mitigation" practices in the occupied territory on the ability of the occupied State to respond to the climate crisis in relation to the rest of its territory and to contribute to global climate efforts. This notably raises the issue of the Occupying Power's responsibility to ensure that activities which take place in its territory, or in any areas under its jurisdiction (including the occupied territory), do not cause significant damage to the environment of another State.[159]

157 B. K. Weinger, above note 77, p. 2.

158 Ministry of Energy and Environmental Protection of Ukraine, *Ukraine's Greenhouse Gas Inventory 1990–2018*, 2020, pp. 4, 365; Georgia, Nationally Determined Contribution, 2021, p. 8.

159 In this sense, see ILC Draft Articles, above note 66, Principle 21.

International Review of the Red Cross (2023), **105** (924), 1365–1391.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000309

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Time for "environmentarian corridors"? Investigating the concept of safe passage to protect the environment during armed conflict

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Abstract

Actors engaging in a diverse set of environmental protection activities are experiencing serious difficulties executing their mandates during armed conflict, leading to environmental harm that could otherwise have been mitigated. This article examines to what extent the international legal and policy framework can ensure the protection of environmental protection actors during armed conflict. It is argued that environmental protection actors can be seen either as part of civil defence organizations or as humanitarian relief actors, and are therefore covered by special

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protections under international humanitarian law. However, two main challenges remain: (1) despite these existing provisions, environmental protection actors may still face access and safety issues during armed conflict, and (2) within this framework, environmental protection activities must be linked to civilian needs and cannot be conducted based on ecocentric motivations. To overcome these challenges, the article introduces the concept of "environmentarian corridors". Environmentarian corridors would allow for the unimpeded movement of environmental protection workers and resources through contested territory and into emergency areas to protect the environment. They would also serve to increase awareness about obligations to protect the environment and would help to ensure the safety of environmental protection actors during armed conflict, as the role and mandate of these actors is explicitly accepted by stakeholders. Additionally, environmentarian corridors offer potential for conducting environmental protection activities on ecocentric grounds. The article concludes by advocating for stakeholders to employ the provisions and concepts articulated herein as a means to further promote and strengthen initiatives aimed at protecting the environment during armed conflict.

Keywords: environmental protection, armed conflict, environmental impacts, international humanitarian law, humanitarian corridors, civil defence, humanitarian relief.

Introduction

While peacetime activities cause the largest proportion of environmental degradation and damage in the world, the historical record of armed conflicts shows that warfare has also had a dramatic impact on various aspects related to the environment.[1] With Earth systems[2] already exposed in peacetime, and with the introduction of new military technologies, the severity of environmental impacts associated with armed conflict has considerably worsened in recent years.[3] Greater environmental damage is now possible in a single day than in months of warfare 2,000 years ago, even without taking into consideration weapons of mass destruction.[4] This is further exacerbated by exploitation of natural resources to finance armed forces, leading to significant environmental degradation.[5]

1 Karen Hulme, *War Torn Environment: Interpreting the Legal Threshold*, Brill, Leiden and Boston, MA, 2004.

2 "Earth systems" are defined here as the interacting physical, chemical and biological processes between the atmosphere, cryosphere, land, ocean and lithosphere. See Will Steffen *et al.*, "The Emergence and Evolution of Earth System Science", *Nature Reviews Earth and Environment*, Vol. 1, No. 1, 2020.

3 Nada Al-Duaij, *Environmental Law of Armed Conflict*, Transnational Publishers, New York, 2004.

4 Susan D. Lanier-Graham, *The Ecology of War: Environmental Impacts of Weaponry and Warfare*, Walker, New York, 1993.

5 Richard A. Matthew, Oli Brown and David Jensen, *From Conflict To Peacebuilding: The Role Of Natural Resources And The Environment*, Policy Paper No. 1, United Nations Environment Programme (UNEP), Nairobi, 2009; Global Witness, *The Sinews Of War: Eliminating The Trade In Conflict Resources*, briefing document, November 2006.

As the devastating impacts of armed conflicts on the environment have become increasingly considered by the international community, there has been a growing demand for strategies that can prevent and mitigate environmental destruction during war.[6] Avoiding environmental harm before it occurs is safer, easier and cheaper than retroactively remedying environmental damage that has already been inflicted;[7] different strategies have therefore been proposed by experts and scholars to prevent environmental damage from occurring in the first place. Such strategies include integrating environmental considerations into military planning,[8] developing and strengthening international agreements and protocols,[9] creating protected areas and demilitarized zones,[10] and fostering environmental awareness among military personnel.[11]

Despite these commendable efforts, however, environmental damage during armed conflict continues to occur. This has most recently been seen in the Russia–Ukraine war, where fighting has led to severe air pollution, greenhouse gas emissions and habitat destruction for wildlife.[12] The environmental disaster in Ukraine highlights the importance of adopting a holistic approach to environmental protection, which should not only focus on preventing harm but also include strategies to mitigate the ecological damage caused by such events. Addressing environmental damage after it has occurred is a necessary course of action in order to mitigate the negative impacts on both the environment and human communities.

Yet, actors engaging in a diverse set of environmental protection activities to remediate environmental harm (such as extinguishing forest fires,[13] conserving biodiversity[14] or providing environmental remediation[15]) are experiencing serious difficulties in executing their mandates during armed conflicts. This leads to environmental harm that otherwise could have been mitigated. Recognizing the importance of engaging environmental protection actors at an early stage after an environmental damage event, this article will discuss the existing legal and policy infrastructure that could serve to secure the safe passage of workers and relief

6 K. Hulme, above note 1.
7 N. Al-Duaij, above note 3, p. 45.
8 David E. Mosher *et al.*, *Green Warriors: Army Environmental Considerations for Contingency Operations from Planning through Post-Conflict*, Rand Corporation, Santa Monica, CA, 2008.
9 Elizabeth Mrema, Carl Bruch and Jordan Diamond, *Protecting the Environment during Armed Conflict: An Inventory and Analysis of International Law*, UNEP and Earthprint, Nairobi, 2009.
10 Michaela Halpern, "Protecting Vulnerable Environments in Armed Conflict: Deficiencies in International Humanitarian Law", *Stanford Journal of International Law*, Vol. 51, No. 2, 2015.
11 Hendrik A. P. Smit, "How Green is Your Army? The Military Environmental Narrative of the South African Army", *South African Geographical Journal*, Vol. 100, No. 3, 2018.
12 Paulo Pereira, Ferdo Bašić, Igor Bogunovic and Damia Barcelo, "Russian–Ukrainian War Impacts the Total Environment", *Science of the Total Environment*, Vol. 837, 2022.
13 Olena Yatseno, "Kinburn Spit was under the Threat of Destruction – Denisova", *Ecopolitic*, 17 May 2022, available at: https://tinyurl.com/32f4kana (all internet references were accessed in July 2023).
14 Henrike Schulte and Doug Weir, "Do Mention the War: Why Conservation NGOs Must Speak Out on Biodiversity and Conflicts", Conflict and Environment Observatory, 11 April 2022, available at: https://ceobs.org/do-mention-the-war-why-conservation-ngos-must-speak-out-onbiodiversity-and-conflicts/.
15 World Bank, *Implementation Completion and Results Report: Red Sea and Gulf of Aden Strategic Ecosystem Management Project*, Report No. ICR00004650, 28 June 2019.

action aimed at protecting, safeguarding and restoring the environment during armed conflict.

First, the article proceeds to describe the anthropocentric and ecocentric underpinnings for engaging in environmental protection activities during armed conflict. These two perspectives are not mutually exclusive, but they do entail the use of different legal and policy instruments to a certain extent, so it is important to understand the difference between them.

Thereafter, the justification for conducting environmental protection efforts during an ongoing armed conflict will be described by highlighting how the current legal and policy frameworks have failed to prevent environmental damage in the context of armed hostilities. It is also noted how post-conflict remedial measures frequently prove inadequate in addressing environmental degradation in a prompt and cost-effective manner, particularly when conflicts become protracted over several years. This speaks to the need for environmental remedial measures also during an ongoing armed conflict.

Resting on the anthropocentric rationale for environmental protection, and given the mounting scientific evidence that testifies to the centrality of a clean, healthy and sustainable environment for human survival, there is a strong argument for considering environmental protection actors to be seen either as part of civil defence organizations[16] or as humanitarian relief actors.[17] This would extend special protections to environmental protection actors under international humanitarian law (IHL).

While this interpretation would represent a significant step towards improving safety and security conditions for environmental protection actors during armed conflict, there may still be situations when these actors are confronted with access and safety challenges. Thus, in addition to supporting sensitization efforts on how existing obligations can be interpreted to allow for access and protection of environmental protection actors, it is suggested that the international community advocate for the establishment of so-called "environmentarian corridors". This idea draws upon recent legal developments on the concept of protected zones for safeguarding the environment,[18] and would refer to a protected zone which allows environmental protection workers and resources to access contested territory and emergency areas for the purpose of providing emergency environmental protection. By referring to this zone as an "environmentarian corridor", it may also help to improve general awareness of the importance of protecting the environment during armed conflict.

Finally, it is noted that these two approaches can be utilized together, or independently. Environmental protection activities qualifying as civil defence or

16 As defined in Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I), Arts 61–67.

17 The definition of humanitarian relief actors is discussed under the section "Environmental Actors as Humanitarian Relief Workers".

18 See, for example, International Law Commission (ILC), *Draft Principles on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/74/10, 9 August 2022, Arts 4, 17.

humanitarian relief can be carried out both in the context of environmentarian corridors and as autonomous, distinct operations. An environmentarian corridor may be called for to enhance safety for those carrying out environmental protection as part of civil defence or humanitarian relief, but also in instances where the link between the environmental protection activity and the well-being and safety of civilians is weaker, and the protection activity is instead underpinned by ecocentric motivations. The success of utilizing a particular framework in a given situation will ultimately depend on the environmental damage situation, the environmental protection initiative under consideration, the conflict scenario, and the geopolitical dynamics involved. Of primary concern is a normative shift in the importance attributed to environmental protection activities during armed conflicts. Parties need to be aware that there is often a pressing need to mitigate and remediate harm as soon as possible after environmental damage has occurred and that environmental protection actors should be accorded free access to carry out activities without having to fear for their security and well-being.

Protecting the environment during armed conflict

Motivations for protecting the environment under international law can generally be divided into two categories: anthropocentric and ecocentric. The anthropocentric perspective values the environment for its utility to humankind, including its ability to provide resources such as food, shelter, fuel and clothing. This approach also recognizes the impact of the environment on the quality of human life.[19]

The ecocentric perspective does not ignore the importance of the environment to human survival, but insists that the value of protecting the environment is not dependent on its utility for human beings.[20] Of course, both positions are ultimately epistemologically anthropocentric, as they rely on human constructs and reflect human perceptions of the relationships between humans and the natural world. However, the terms are employed in this article to denote a shift from a narrow conception of human interest that prioritizes direct aesthetic, economic or self-preserving concerns to a broader understanding that recognizes the need to sacrifice some of these interests in order to achieve a particular conception of "nature". Thus, it may be more accurate to characterize the difference as one between anthropocentric anthropocentrism and ecocentric anthropocentrism.[21]

19 Alexander Gillespie, "Anthropocentricism", in Alexander Gillespie (ed.), *International Environmental Law, Policy, and Ethics*, Oxford University Press, Oxford, 2014.

20 Michael N. Schmitt, "Green War: An Assessment of the Environmental Law of International Armed Conflict", *Yale Journal of International Law*, Vol. 22, No. 1, 1997.

21 Jessica C. Lawrence and Kevin Jon Heller, "The First Ecocentric Environmental War Crime: The Limits of Article 8(2)(b)(iv) of the Rome Statute", *Georgetown International Environmental Law Review*, Vol. 20, No. 1, 2007.

In recent decades, there have been various efforts to shift the focus of international environmental law away from its original anthropocentric biases and to recognize the inherent value of the environment and the need to protect it for its own sake, rather than solely for its instrumental value to humans.[22] Still, the main focus of IHL, which is the body of law governing armed conflict, has always been humanitarian concerns – protecting the lives and dignity of individuals, distinguishing between combatants and civilians, and regulating the means and methods of warfare in order to minimize suffering and harm to individuals.[23] This means that the justification for engaging in environmental protection measures under IHL will often have to be made on anthropocentric grounds.

Environmental protection under IHL

While IHL has traditionally given less consideration to environmental issues due to its focus on protecting human beings, protection of the environment is not completely absent from this body of law. This section will provide a brief overview of the environmental protections offered by IHL.

Many IHL provisions consider the environment as deserving of protection in light of its importance to humans, human interests and human survival, reflecting an anthropocentric approach. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services has made an attempt to unpack local, indigenous knowledge and academic research from various disciplines in order to describe "nature's contributions to people" – an analytical and generalizing perspective that highlights the flows from nature to people, defined by the type of contribution that a particular aspect of nature makes to people's quality of life.[24] Considering these various contributions, it is clear that in order to adequately further human welfare and protect humans, the environment needs to be protected. This is also in line with international human rights law, where the human right to a healthy environment has been widely recognized.[25] While environmental rights and responsibilities long have been established in many indigenous cultures, the Stockholm Declaration of 1972[26] marked the first official recognition of the human right to live in a healthy environment.[27] The right to a clean, healthy and sustainable environment as a human right was also recently recognized by the United Nations (UN) General Assembly,[28] and several courts

22 Vito De Lucia, "Beyond Anthropocentrism and Ecocentrism: A Biopolitical Reading of Environmental Law", *Journal of Human Rights and the Environment*, Vol. 8, No. 2, 2017.

23 Michael D. Deiderich Jr, "'Law of War' and Ecology – A Proposal for a Workable Approach to Protecting the Environment through the Law of War", *Military Law Review*, Vol. 136, 1992, pp. 142–143.

24 Sandra Díaz *et al.*, "Assessing Nature's Contributions to People", *Science*, Vol. 359, No. 6373, 2018.

25 David R. Boyd, "Catalyst for Change: Evaluating Forty Years of Experience in Implementing the Right to a Healthy Environment", in John H. Knox and Ramin Pejan (eds), *The Human Right to a Healthy Environment*, Cambridge University Press, Cambridge, 2018, p. 17.

26 Declaration of the UN Conference on the Human Environment, UN Doc. A/Conf.48/14/ Rev.1, 1972.

27 D. R. Boyd, above note 25, p. 17.

28 UNGA Res. 76/300, 28 July 2022.

and tribunals have explicitly acknowledged the interconnectedness between humans and the environment by affirming that environmental harm affects the right to life.[29]

Under customary IHL, the civilian status of the environment is considered a cornerstone principle in environmental protection during armed conflict.[30] The IHL principle of distinction prohibits attacks against the natural environment and affords the environment immunity from attacks as long as it does not constitute a military objective.[31] However, certain parts of the environment may become legitimate targets, such as when military personnel are using natural areas for cover or concealment.[32] In situations where elements of the environment constitute a military objective, the principles of proportionality and necessity provide that an attack may be deemed unlawful if the collateral civilian damage, including environmental damage, is excessive in relation to the specific military advantage gained. States must weigh the anticipated military advantage against the foreseeable environmental damages when assessing whether an attack is proportionate or not. These principles serve to protect the environment from unnecessary harm,[33] but the inherent uncertainty surrounding the potential impact of such damages can make it challenging to accurately determine proportionality in these situations.[34]

In response to a growing general awareness of the need to protect the environment, notable legal advancements have arisen within IHL with the aim of promoting environmental protection for its own sake.[35] The 1970s saw the adoption of the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Techniques (ENMOD Convention)[36] and Additional

29 The most recent ruling is the Advisory Opinion of the Inter-American Court of Human Rights which established that there is an inherent relationship between human rights and environmental protection. See, for example, Inter-American Court of Human Rights, *Medio ambiente y derechos humanos* [*The Environment and Human Rights*], Advisory Opinion No. OC 23-17, Series A, No. 23, 15 November 2017; Inter-American Commission on Human Rights, *Yanomami v. Brazil*, Resolution No. 12/85, Case No. 7615, 5 March 1985; Community Court of Justice, Economic Community of West African States, *Socio-Economic Rights and Accountability Project (SERAP) v. Nigeria*, Judgment No. ECW/CCJ/JUD/18/12, 14 December 2012; European Court of Human Rights, *Öneryildiz v. Turkey*, Appl. No. 48939/99, Judgment, 30 November 2004, para. 71.

30 Dieter Fleck (ed.), *The Handbook of International Humanitarian Law*, Oxford University Press, Oxford, 2021, p. 341.

31 Yoram Dinstein, *The Conduct of Hostilities under the Law of International Armed Conflict*, Cambridge University Press, Cambridge, 2016, pp. 204–205.

32 Dieter Fleck, "Protection of the Environment in Relation to Armed Conflicts", in D. Fleck (ed.), above note 30, p. 341. This principle is codified in Article 2(4) of Protocol III to the Convention on Certain Conventional Weapons, which specifies that only elements of the environment which cover, conceal or camouflage military objectives may be targeted.

33 Peter J. Richards and Michael N. Schmitt, "Mars Meets Mother Nature: Protecting the Environment during Armed Conflict", *Stetson Law Review*, Vol. 28, No. 4, 1999.

34 Michael Bothe, Carl Bruch, Jordan Diamond and David Jensen, "International Law Protecting the Environment during Armed Conflict: Gaps and Opportunities", *International Review of the Red Cross*, Vol. 92, No. 879, 2010, pp. 569, 577.

35 D. Fleck, above note 32.

36 Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques, 1108 UNTS 151, 10 December 1976 (entered into force 5 October 1978) (ENMOD Convention), Art. 63(2).

Protocol I to the four Geneva Conventions of 1949 (AP I).[37] Both AP I and the ENMOD Convention are unprecedented in one important aspect: both instruments contain provisions that are aimed at protecting the Earth's natural environment for its own sake and do not depend upon direct injury to identifiable human beings, thus taking a more ecocentric approach than previous provisions existing at the time.[38]

Article 1 of the ENMOD Convention prohibits "environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction", while Article 35 of AP I holds that "[i]t is prohibited to employ methods and means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment". Additionally, Article 55 of AP I holds that "[c]are shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage".

The differences between the texts are not an oversight but are intentional. The three conditions of the prohibition in AP I are cumulative (joined by "and"), making the damage threshold under AP I very high. While the ENMOD Convention does not share the same high threshold (the conditions in the Convention are alternatives, joined by "or"), it is highly specific and refers only to environmental modification techniques, making it difficult to apply in other circumstances.

Limitations of the IHL framework for preventing environmental harm

The existing framework of IHL exhibits several limitations with regard to effectively preventing environmental harm that may occur during armed conflicts.

Scholars have held that it is very unlikely that the damage threshold under AP I or the ENMOD Convention can ever be reached by conventional warfare.[39] Both provisions have been criticized for being excessively restrictive, making the prohibition much too narrow from an environmental point of view.[40]

Although the environment in principle is considered a civilian object, elements of the environment often become military objectives if they are used for military purposes. The movement of soldiers, even if temporary, can result in the loss of civilian protections afforded to the environment in which the soldiers move.[41] In cases where the civilian status remains, parties often justify environmental harm by alluding to the principle of military necessity – i.e., that environmental damage is required or necessary to gain a particular military advantage.[42] While the harm incurred by the environment often leads to serious consequences for Earth systems, it rarely reaches the threshold of causing "widespread, long-term and/or severe" damage as discussed in the previous

37 See above note 16.
38 M. D. Deiderich Jr, above note 23, p. 152.
39 M. Bothe *et al.*, above note 34, p. 576.
40 E. Mrema, C. Bruch and J. Diamond, above note 9, p. 237; M. Bothe *et al.*, above note 34.
41 D. Fleck, above note 32, p. 341.
42 M. Bothe *et al.*, above note 34.

section.[43] As a result, parties to an armed conflict can engage in environmental destruction with little or no consequences for their actions.

In order to determine what level of environmental damage would be excessive in relation to the military advantage sought, there have been efforts to derive particular standards for proportionality in attacks.[44] There have also been calls for interpretive guidance on the requirements for the threshold of "widespread, long-term and/or severe" damage, to make it clear that this threshold should be interpreted in light of the latest scientific understanding of ecosystem functions.[45] As such guidance has yet to be provided by an authoritative international law body such as the International Court of Justice (ICJ) or the International Law Commission (ILC), it has been suggested that the Martens Clause could be used to derive particular standards for proportionality, as well as to determine the "widespread, long-term and/or severe" threshold with regard to AP I and the ENMOD Convention.[46]

The Martens Clause has found its way into various treaties, including the four 1949 Geneva Conventions and their Additional Protocols, as well as the recently adopted ILC Principles on Protection of the Environment in Relation to Armed Conflicts (PERAC Principles), where it is held that the Clause also applies to environmental matters.[47] In essence, the Martens Clause provides that in cases not covered by specific international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived from established custom, from the principles of humanity and from the dictates of public conscience. The ILC also holds that the term "the principles of humanity" can be interpreted more broadly to encompass humanitarian standards that are present not only in IHL but also in international human rights law, which provides vital protections for the environment.[48]

Another proposal that has been discussed to prevent environmental harm is to create legal instruments for establishing place-based protection of critical natural resources and areas of ecological importance;[49] this was highlighted by the Special Rapporteur on Protection of the Environment in Relation to Armed Conflict[50] and in the PERAC Principles. States are encouraged to enter into agreements in

43 E. Mrema, C. Bruch and J. Diamond, above note 9.
44 Dieter Fleck, "The Martens Clause and Environmental Protection in Relation to Armed Conflicts", *Goettingen Journal of International Law*, Vol. 10, No. 1, 2020.
45 E. Mrema, C. Bruch and J. Diamond, above note 9, p. 239; Daniëlla Dam-de Jong and Britta Sjostedt, "Enhancing Environmental Protection in Relation to Armed Conflict: An Assessment of the ILC Draft Principles", *Loyola of Los Angeles International and Comparative Law Review*, Vol. 44, No. 2, 2021, p. 145; K. Hulme, above note 1.
46 D. Dam-de Jong and B. Sjostedt, above note 45, p. 145; D. Fleck, above note 44.
47 ILC, above note 18, Art. 12.
48 ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries*, UN Doc. A/77/10, 9 August 2022 (PERAC Principles), Art. 12(7). This is also reflected in the final Principles.
49 E. Mrema, C. Bruch and J. Diamond, above note 9, p. 240.
50 Marja Lehto, *Third Report on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/750, 16 March 2022, paras 46–54.

which areas of major ecological and cultural importance are recognized as protected against attacks during armed conflict,[51] which would oblige parties to protect these zones against attacks, although if the area contains a military objective, it will subsequently lose its protection against attacks according to the principle of distinction.[52] It has also been suggested that environmental considerations should be integrated into military planning, and that environmental awareness-raising efforts in the military could be a promising avenue for ensuring environmental protection. However, the effectiveness of these strategies is largely dependent on States' long-term dedication to investing in and securing environmental protection during armed conflict, and they cannot guarantee the complete prevention of all environmental damage, as some level of harm may still occur.

The rationale for remediating environmental harm during ongoing armed conflict

In view of the foreseeable environmental damage during armed conflicts within the current legal and policy frameworks, it is imperative to tackle such damage soon after its occurrence in order to mitigate its detrimental impacts on both the environment and human communities.

Mitigation and remediation efforts are specifically addressed under the PERAC Principles[53] and have primarily been considered as important during the post-conflict and peacebuilding phase.[54] However, evaluations of clean-up efforts in the context of armed conflict have shown that in many cases, the sooner efforts are made to address environmental and health risks, the more likely they are to achieve an effective outcome in terms of protecting the environment and human health from further effects and risks. Early action is also preferable as clean-up costs often increase with time, especially with regard to contaminants that can migrate through the soil and affect groundwater.[55] As armed conflicts often last longer than a few months – sometimes up to several years[56] – delaying environmental mitigation and remediation efforts until after the conflict's cessation may result in more severe and long-term environmental consequences and impacts than if remediation had been initiated earlier. It is therefore essential to engage environmental protection actors at an early stage after environmental damage has occurred, in order to protect the environment and the conflict-affected communities dependent on it.

In terms of other environmental protection activities, such as increasing or sustaining biodiversity through conservation efforts, research has found that there is

51 PERAC Principles, above note 48, Art. 4.
52 *Ibid.*, above note 48, Art. 12; see also D. Dam-de Jong and B. Sjostedt, above note 45, p. 137.
53 PERAC Principles, above note 48, Arts 23, 24.
54 David Jensen and Steven Lonergan, *Assessing and Restoring Natural Resources in Post-Conflict Peacebuilding*, Earthscan, Abingdon, 2012.
55 Thor Hanson *et al.*, "Warfare in Biodiversity Hotspots", *Conservation Biology*, Vol. 23, No. 3, 2009.
56 Benjamin Jensen, "How Does It End? What Past Wars Tell Us about How to Save Ukraine", Center For Strategic and International Studies, 4 March 2022, available at: www.csis.org/analysis/how-does-it-end-what-past-wars-tell-us-about-how-save-ukraine.

less damage to biodiversity in places where conservation activities continue compared to areas where conservation efforts are suspended.[57] The strong positive relationship between biodiversity hotspots and conflict[58] highlights the importance of continuing conservation efforts in regions affected by armed conflicts.[59] A framework that safeguards environmental protection actors during armed conflict would enable those actors to undertake these crucial environmental protection activities as well, irrespective of whether such efforts are associated with previous harm or not.

Obstacles to conducting environmental protection activities during armed conflict

In order to adequately safeguard the environment during ongoing hostilities, there is a need to ensure that environmental protection actors have access to areas of environmental concern while being protected from attacks. As civilians, environmental protection workers benefit from rules that prohibit attacks on civilians and civilian objects during armed conflicts. Additionally, personnel and installations affiliated with independent environmental protection organizations also benefit from this protection under customary international law applicable in international armed conflicts (IACs) and non-international armed conflicts (NIACs).

Despite these protections, scholarly literature identifies access and security concerns as the primary reasons why certain mitigation, remediation and conservation activities cannot be carried out during armed conflict.[60] During the conflict in Kuwait, Iraqi forces intentionally released crude oil from moored tankers at Sea Island, an offshore oil trans-shipment terminal, leading to a significant oil spill in the Gulf. Ongoing artillery fire and the presence of floating mines caused the main difficulties in assessing the impact of the oil spill and implementing remediation efforts to safeguard the environment.[61] In the Okapi Reserve in the Democratic Republic of the Congo, park guards were directly attacked by parties to the conflict, resulting in an increase in elephant and bushmeat poaching as the guards had to abandon their posts.[62] In Sudan, the operations of international conservation-oriented NGOs were hindered during conflict by a number of factors, including safety risks for fieldworkers.[63] During the war in Ukraine, more than 160,000 hectares of Ukrainian forest burned down

57 Andrew J. Plumptre, "Lessons Learned from On-the-Ground Conservation in Rwanda and the Democratic Republic of the Congo", *Journal of Sustainable Forestry*, Vol. 16, No. 4, 2003, pp. 83–84.
58 T. Hanson *et al.*, above note 55, p. 578.
59 International Union for Conservation of Nature (IUCN), *Conflict and Conservation*, 28 April 2021.
60 *Ibid.*, p. 55.
61 U. C. Jha, *Armed Conflict and Environmental Damage*, Vij Books India, New Delhi, 2014, p. 52.
62 Rene L. Beyers *et al.*, "Resource Wars and Conflict Ivory: The Impact of Civil Conflict on Elephants in the Democratic Republic of Congo – The Case of the Okapi Reserve", *PLOS ONE*, Vol. 6, No. 11, 2011.
63 Ahmed A. H. Siddig, "Biodiversity of Sudan: Between the Harsh Conditions, Political Instability and Civil Wars", *Biodiversity Journal*, Vol. 5, No. 4, 2014, p. 545.

as forestry companies and fire fighters were prevented from accessing fire-affected areas and firefighting equipment was damaged by Russian troops.[64]

These examples make it clear that the civilian protection rendered to environmental protection actors has not been sufficient to ensure that these actors can safely access and carry out activities in areas of concern. This can of course be viewed in light of the prevalent disregard for international laws aimed at safeguarding civilians in times of armed conflict in general,[65] but also in light of the distinctive attributes associated with many environmental protection operations. Those who seek to provide environmental protection or remediation services during armed conflict are likely to operate and carry out activities in dangerous front-line environments. Activities such as decontamination, conservation work or firefighting could also mistakenly be seen as providing assistance to enemy troops or in other ways resembling military activity. There is therefore a pressing need to extend further protections to environmental protection actors in order to ensure that their mandate can be realized in practice.

Strategies on how to realize the mandate to protect the environment during armed conflict have to some extent previously been discussed by legal scholars. Deiderich calls for the international community to allow a neutral body to act as the representative of the environment as a sort of "Green Cross" organization. The body may be responsible for the creation and oversight of environmental conservation areas, providing expert guidance on the appropriateness of military actions based on the principle of proportionality, and overseeing or assisting with efforts to remediate and clean up areas affected by military operations.[66] Al-Duaij argues that the International Union for the World Conservation of Nature and Natural Resources (IUCN) should have the ability to intervene in military operations in times of armed conflict in order to protect the environment.[67] Wright proposes that the United Nations Environment Programme (UNEP) should be authorized to enter the locus State following an environmental accident in order to investigate whether the event constitutes a "major international environmental emergency" and to potentially remediate the emergency.[68]

While these proposals suggest that access and safety issues can be addressed through increasing the scope of existing organizations or creating new entities, the present article argues that there is no need for a central authority to assume this mandate. Rather, existing legal and policy frameworks can adequately protect environmental protection actors from attack and oblige parties to allow said actors free and safe passage to carry out environmental protection activities in armed conflict. This will be discussed in the following sections.

64 Serhiy Zibtsev, "Червона спека" ["Red Heat"], *ЕКО-інформ* [*EKO-Inform*], 27 July 2022.
65 UN Security Council 9327th Meeting, UN Doc. SC/15292, 23 May 2023.
66 M. D. Deiderich Jr, above note 23.
67 N. Al-Duaij, above note 3, p. 471.
68 Claire Wright, "Blueprint for Survival: A New Paradigm for International Environmental Emergencies", *Fordham Environmental Law Review*, Vol. 29, No. 2, 2017, p. 311.

Protecting environmental protection actors under IHL

Under IHL, there exist certain provisions that aim to protect actors and organizations carrying out non-military activities to safeguard, protect and meet the needs of the civilian population. Taking note of the importance of a safe, healthy and sustainable environment for human beings, this article argues that environmental protection activities effectively aim to safeguard, protect and meet the needs of the civilian population, and shall thus fall under these provisions. The following section will therefore discuss how environmental protection activities qualify as either civil defence activities or humanitarian relief activities.

The IHL provisions concerning civil defence activities and humanitarian relief activities were established recognizing that these operations require an extra layer of protection beyond what is typically provided for civilians. In theory, individuals engaged in these activities should be safeguarded due to their civilian status. However, the practical reality often falls short of providing this protection, as their conduct may be mistaken as having a military rather than humanitarian purpose.

The approach of viewing environmental protection activities as part of civil defence or humanitarian relief finds support in Article 36 of the International Committee of the Red Cross (ICRC) *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*, which holds that parties to an armed conflict "are encouraged to facilitate and protect the work of *impartial organizations contributing to preventing or repairing damage to the environment*".[69] The article subsequently refers to Article 63(2) of Geneva Convention IV (GC IV), which holds that "[o]ther relief societies shall be permitted to continue their humanitarian activities under similar conditions [to National Red Cross and Red Crescent Societies]", and Articles 61–67 of AP I, which all relate to civil defence activities. These two approaches will be discussed in turn.

It should be noted that the lack of a precise definition of "environmental protection activities" and "environmental protection actors" in the present article is intentional. The intricate relationship between environmental damage, protection efforts and human welfare is unique to each context and locality, and establishing a set of criteria for such activities could limit the scope of what qualifies as environmental harm or protection, as well as excluding organizations and individuals striving to safeguard the environment. Thus, the onus falls on environmental protection actors to evaluate their position within the legal and policy framework outlined in this article.

69 ICRC, *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*, Geneva, 1994, Art. 36 (emphasis added).

Environmental protection activities as civil defence activities

As warfare has grown more destructive, it has been recognized that a basic necessity in wartime is an effective organization able to assure the survival of the civilian population.[70] GC IV grants civil protection organizations and their personnel the right to carry out their activities under foreign occupation,[71] and AP I expands the protection for civil defence organizations to cover all situations of IAC. Article 62 of AP I holds that the personnel of civil defence organizations must be respected, protected and enabled to perform their tasks without hindrance except in case of imperative military necessity.[72] However, protections for those carrying out civil defence activities during NIACs still remain limited, as similar civil defence provisions were never included under Additional Protocol II relating to NIACs due to disagreements between the negotiating parties.[73]

The basis for protection under civil defence is not that a person or object belongs to a specific ("civil defence") organization, but that a person exercises, or an object is used for, specific functions.[74] Thus, a civil defence organization carrying out tasks in an area of conflict enjoys protection as long as it keeps within the civil defence articles of AP I. If not, the personnel and equipment concerned will still be protected but only under the protections that civilians generally enjoy, as described in GC IV.[75]

Many of the tasks outlined as civil defence tasks closely resemble tasks that are carried out for environmental protection purposes. Civil defence tasks are defined under Article 61(a) of AP I, whose introductory paragraph holds that

> "civil defence" means the performance of some or all of the undermentioned humanitarian tasks intended to protect the civilian population against the dangers, and to help it to recover from the immediate effects, of hostilities or disasters and also to provide the conditions necessary for its survival.

The paragraph further underlines that the purpose of these activities should be to ensure and further human welfare – meaning that environmental protection activities will have to be conducted on anthropocentric grounds.

Further, the use of the adjective "immediate" emphasizes the fact that civil defence should be restricted to urgent tasks and should not fulfil functions on a long-term basis that are normally performed by others.[76] This entails that it must

70 Michael Bothe, Karl Josef Partsch and Waldemar A. Solf, *New Rules for Victims of Armed Conflicts: Commentary on the Two 1977 Protocols Additional to the Geneva Conventions of 1949*, Martinus Nijhoff, The Hague, 1982, p. 434.

71 Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War of 12 August 1949, 75 UNTS 287 (entered into force 21 October 1950) (GC IV), Art. 63(2).

72 AP I, Arts 61–67.

73 Flemming Nielsen, "Civil Defence in International Humanitarian Relief Work, Seen in the Light of the Geneva Conventions", *Journal of Refugee Studies*, Vol. 9, No. 4, 1996.

74 M. Bothe, K. J. Partsch and W. A. Solf, above note 70, p. 434.

75 F. Nielsen, above note 73.

76 Yves Sandoz, Christophe Swinarski and Bruno Zimmermann (eds), *Commentary on the Additional Protocols*, ICRC, Geneva, 1987 (ICRC Commentary on the APs), p. 718, para. 2354.

be clear how the environmental protection activity will alleviate the "immediate effect" that a given ecological damage will have on humans in order for the actor to be considered as part of civil defence. While the cause and effect of such processes may be straightforward in some cases (such as when extinguishing forest fires), in other cases the relationship may not be as unequivocal (such as when engaging in conservation efforts). However, as scientific understanding of the temporal aspects of nature–human relationships improves, it may become easier to point out the various reasons why these activities should be viewed as dealing with "immediate" effects.

Additionally, the term "disasters" in the introductory sentence is broadly construed and also covers natural disasters as well as any other calamity not caused by hostilities.[77] This is important, as not all environmental damage in need of mitigation or remediation efforts during armed conflict is a direct result of hostilities – such damage can also be due to natural causes. Yet, the difficulties faced by environmental protection actors in remedying these damages remain the same regardless of whether the damage occurred naturally or because of war.[78]

The list of tasks that follows the introductory paragraph is exhaustive, but is somewhat opened up by a "necessary and proper" clause at the end. While some of the functions listed in Article 61(a) concern matters of a purely human-centred character, others are highly relevant to environmental protection. These are (vii) firefighting, (ix) decontamination and similar protective measures, (xii) emergency repair of indispensable public utilities, and (xiv) assistance in the preservation of objects essential for survival. The ways in which these different tasks can be used for environmental protection activities will briefly be reviewed in turn below.

Firefighting as environmental protection

Fires in the context of armed conflict have led not only to loss of habitats for numerous species, but also to the loss of agricultural crops, forests and other ecological areas,[79] making firefighting an obvious and crucial environmental protection activity that qualifies as a civil defence task. The introductory sentence in Article 61(a) was particularly stressed with regard to the task of firefighting, as firefighting can also be carried out as part of military operations.[80] If the firefighting is done with the intention of protecting civilians or military personnel, it should be considered a civil defence task. On the other hand, if it is done to protect a military objective, it is not possible to claim the protection afforded to civil defence tasks.[81] Given the civilian status of the environment,

77 M. Bothe, K. J. Partsch and W. A. Solf, above note 70, p. 434; ICRC Commentary on the APs, above note 76, p. 718, para. 2349.
78 Kaitlyn M. Gaynor *et al.*, "War and Wildlife: Linking Armed Conflict to Conservation", *Frontiers in Ecology and the Environment*, Vol. 14, No. 10, 2016.
79 N. Al-Duaij, above note 3.
80 ICRC Commentary on the APs, above note 76, p. 723, para. 2376.
81 *Ibid.*, p. 723, para. 2378.

firefighting efforts that seek to extinguish fires for environmental protection purposes would therefore qualify as a civil defence task, as these efforts are not aimed at protecting military objectives but are engaged in the protection of a civilian object and the civilian population.

However, if elements of the environment are used for military purposes, they become military objectives. This could create a problem for firefighters seeking to extinguish fires in areas of major environmental importance, as they would no longer be afforded protection as civil defence personnel. Yet, those parts of the environment that become military objectives rarely remain military objectives for an indefinite amount of time and can regain their civilian status if military forces are no longer present in the given area.

Firefighting helps the population to recover from the immediate effects of hostilities or disasters in various ways. The suppression of fires near civilian populations immediately aids the civilian population as it prevents loss of human life and damage to property. Research has also shown that fires in remote areas can have short-term effects on ecosystem services[82] and can degrade air[83] and water quality.[84]

Decontamination and protective measures

Military activities during armed conflicts often generate hazardous waste, such as explosives, solvents, acids and spent fuel, that can contaminate the surrounding soil, water and air.[85] It is therefore vital to ensure that actors engaging in cleanup and remediation efforts of contaminated areas are protected during hostilities.

Decontamination and similar protective measures are listed as civil defence tasks under Article 61(a)(ix) of AP I,[86] rendering protection to any actor engaging in these activities as long as the decontamination and protective measures are conducted to help the civilian population, along with the specifications listed in the introductory sentence of Article 61. The ICRC's 1987 Commentary to this provision notes that decontamination can take various forms, but that the phrase "similar protective measures" allows for flexibility in how decontamination should be interpreted.[87] This indicates that actors engaging in environmental protection activities which relate to cleanup efforts and decontamination of environmental harmful waste can be considered protected under Article 61(a)(ix).

82 Paulo Pereira, Igor Bogunovic, Wenwu Zhao and Damia Barcelo, "Short-Term Effect of Wildfires and Prescribed Fires on Ecosystem Services", *Current Opinion in Environmental Science and Health*, Vol. 22, August 2021.

83 Carlyn J. Matz *et al.*, "Health Impact Analysis of PM2.5 from Wildfire Smoke in Canada (2013–2015, 2017–2018)", *Science of the Total Environment*, Vol. 725, 10 July 2020.

84 Charles Rhoades, João P. Nunes, Uldis Silins and Stefan H. Doerr, "The Influence of Wildfire on Water Quality and Watershed Processes: New Insights and Remaining Challenges", *International Journal of Wildland Fire*, Vol. 28, No. 10, 2019, p. 721.

85 N. Al-Duaij, above note 3, p. 6.

86 ICRC Commentary on the APs, above note 76, p. 727, para. 2385.

87 *Ibid.*

Emergency repair of indispensable public utilities

Aspects of the built environment also have relevance to the "natural environment".[88] The destruction of dams that flow to agricultural areas, of sewage treatment facilities and of power plants that release poisonous emissions have resulted in damage not only to the civilian population but to the environment as well.[89]

Emergency repair of indispensable public utilities is listed as a civil defence task under Article 61(a)(xii) of AP I. Here, the term "public utilities" refers to services and commodities that are provided to the general public, such as water, gas, electricity and communications, and it specifically pertains to the facilities and equipment that are used to supply these types of services and commodities.[90] The report of Committee II specified that the expression "public utilities" includes, "inter alia, water control works (e.g., dams, dykes, drainage and discharge canals, outlets, sluices, locks, floodgates and pumping installations)".[91] By repairing indispensable public utilities that have been damaged, further environmental harm can be prevented.

The ICRC's 1987 Commentary on AP I provides that the scope of civil defence efforts typically is limited to the repair of essential public utilities in the event of an emergency. This means that civil defence measures should not address all deficiencies in such utilities, but should rather focus on essential tasks that are necessary to prevent harm or further damage to the environment.[92]

Assistance in the preservation of objects essential for survival

It has previously been established that a clean, healthy and sustainable environment is recognized not only as an international human right, but as imperative for human survival. Article 61(a)(xiv) of AP I holds that assistance in the "preservation of objects essential for survival" can be seen as a civil defence task. Yet, while the environment is essential for human survival, it is not clear whether the environment can be considered an object essential for survival in the meaning of Article 61(a)(xiv).

The 1973 draft of AP I proposed the inclusion of a provision for the "safeguard of objects indispensable to the survival of the civilian population" in order to align with the language used in Article 48 (the present Article 54) of the draft. Article 54(2) lists "foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies and

88 The "natural environment" here refers to "the natural world together with the system of inextricable interrelations between living organisms and their inanimate environment, in the widest sense possible". See ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict*, Geneva, 2020, p. 17, para. 16.
89 N. Al-Duaij, above note 3, pp. 22–23.
90 M. Bothe, K. J. Partsch and W. A. Solf, above note 70, p. 440.
91 ICRC Commentary on the APs, above note 76, p. 729, para. 2394.
92 *Ibid.*, p. 729, para. 2395.

irrigation works" as objects indispensable to the survival of the civilian population. If the original formulation of this provision had been retained, it would have been challenging to justify the inclusion of the environment as an object essential for survival under Article 61(a)(xiv), as the list of objects protected under Article 54 is quite specific.

In order to avoid confusion with the term "indispensable" used in Article 54,[93] this proposal was ultimately rejected and the term "essential" was chosen instead to broaden the scope of the provision.[94] Objects essential for survival are therefore supposed to be broader in scope compared to objects indispensable to the survival of the civilian population. Although the revised provision may appear to have a wider scope, the interpretation provided in the ICRC Commentary suggests that the distinction between "essential" and "indispensable" may have little practical significance in terms of the objects protected under the provision: "Once again common sense must prevail and it is not worth quibbling about whether soap, for example, is essential or indispensable."[95] If there is little practical significance in terms of the objects under Article 54 and Article 61(a)(xiv) as suggested by the ICRC Commentary, aspects of the environment that do not relate to food, agriculture or water may therefore not be considered objects essential for survival under Article 61(a)(xiv).

However, "whenever the legal regulation provided by a treaty or customary rule is doubtful, uncertain or lacking in clarity", the Martens Clause, discussed above, has been seen to offer additional interpretative guidance.[96] In light of the Martens Clause's principles of humanity (which refers to humanitarian standards not only in IHL but also in international human rights law) and the dictates of public conscience, it is not radical to argue that the environment should be included in the scope of Article 61(a)(xiv), given the intrinsic relationship between human survival and the environment under human rights law and the intention to broaden the scope of Article 61(a)(xiv).

If this is accepted, environmental protection actors will remain protected when carrying out activities that aim to preserve the environment in various different forms not covered under Article 61(a)(vii), (ix) and (xii). These activities can vary in character and nature as long as they do not involve guard duties or the use of weapons[97] and are conducted with immediate humanitarian protection needs in mind as given by the introductory sentence to Article 61(a). Activities that can be encompassed under this provision could, for example, include efforts to preserve biodiversity and ecosystems.

93 ICRC Commentary on the APs, above note 76, p. 729, para. 2401.
94 M. Bothe, K. J. Partsch and W. A. Solf, above note 70, p. 441.
95 ICRC Commentary on the APs, above note 76, p. 729, para. 2402.
96 Antonio Cassese, "The Martens Clause: Half a Loaf or Simply Pie in the Sky?", *European Journal of International Law*, Vol. 11, No. 1, 2000, pp. 212–213; D. Fleck, above note 44.
97 M. Bothe, K. J. Partsch, and W. A. Solf, above note 70, p. 441.

Environmental actors as humanitarian relief workers

Under IHL, protections are also afforded to humanitarian workers and organizations. The humanitarian nature of environmental protection activities has already been discussed in the section above on civil defence; it can therefore be argued that environmental protection personnel could be considered as humanitarian relief personnel and could accordingly be entitled to the protection offered to humanitarian workers.[98]

Humanitarian relief differs from civil defence in that it is featured not only under AP I, but also in the four Geneva Conventions. The scope of humanitarian assistance under the Conventions is broad.[99] While Articles 59 and 61 of GC IV specify the type of relief to be provided,[100] common Article 3 does not specify the specific nature of the assistance.[101] Additionally, common Article 9/9/9/10 indicates that humanitarian efforts may encompass both protective measures and assistance.[102]

In the *Military and Paramilitary Activities in and against Nicaragua* case, the ICJ considered the legal definition of "humanitarian" assistance and held that humanitarian assistance must be given without discrimination "to prevent suffering" and "to protect life and health and ensure respect for the human being".[103] The Institute of International Law provides a more extensive definition, considering humanitarian assistance as "all acts, activities and the human and material resources for the provision of … services of an exclusively humanitarian character, indispensable for the survival and the fulfilment of the essential needs of the victims of disasters".[104]

98 See also Political Declaration on Strengthening the Protection of Civilians From the Humanitarian Consequences Arising from the Use of Explosive Weapons in Populated Areas, Explosive Weapons In Populated Areas Dublin Conference, 2022, where the environmental impacts of explosive weapons are recognized (Arts 1.4–1.5) and the obligation to provide rapid, safe and unhindered humanitarian access and facilitate organizations aimed at protecting and assisting civilian populations and addressing the direct and indirect humanitarian impacts of explosive weapons in populated areas is reaffirmed (Arts 4.4, 4.6).

99 Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of 12 August 1949, 75 UNTS 31 (entered into force 21 October 1950), Arts 3, 9; Geneva Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea of 12 August 1949, 75 UNTS 85 (entered into force 21 October 1950), Arts 3, 9; Geneva Convention (III) Relative to the Treatment of Prisoners of War of 12 August 1949, 75 UNTS 135 (entered into force 21 October 1950), Arts 3, 9; GC IV, Arts 3, 10, 59, 61.

100 Article 59 of GC IV provides that "relief schemes … shall consist, in particular, of the provision of foodstuffs, medical supplies and clothing".

101 Kate Mackintosh, "Beyond the Red Cross: The Protection of Independent Humanitarian Organizations and Their Staff in International Humanitarian Law", *International Review of the Red Cross*, Vol. 89, No. 865, 2007, p. 116.

102 Common Article 9/9/9/10 states that "[t]he provisions of the present Convention constitute no obstacle to the humanitarian activities which the International Committee of the Red Cross or *any other impartial humanitarian organization* may, subject to the consent of the parties to the conflict concerned, undertake for the *protection of [protected persons] and for their relief*" (emphasis added).

103 ICJ, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Judgment, *ICJ Reports 1986*, para. 243.

104 Institute of International Law, "Humanitarian Assistance", Resolution of the 16th Commission, 2 September 2003.

Based on these broader definitions, environmental protection activities may be included in the scope of humanitarian assistance, especially given the importance of a clean and healthy environment to human survival as previously discussed in this article.

Protection of environmental actors as humanitarian relief workers

Similarly to those involved in civil defence activities, persons and facilities providing humanitarian assistance are safeguarded by the general protection provided to civilians and civilian objects from attacks in both IACs and NIACs. However, in contrast to the limited provisions protecting civil defence workers (primarily relying on the AP I provisions discussed in the previous section), the recognition of the civilian status of humanitarian workers is spelled out in the Rome Statue of the International Criminal Court,[105] effectively rendering any violation of this protection a war crime. This is further recognized in custom and was the finding of the 2005 ICRC Customary Law Study.[106] Protections afforded to humanitarian workers can also be found in Article 71 of AP I.[107]

Rules under IHL also hold that humanitarian relief shall always be exempted from restrictions created by economic sanctions or a "total embargo" on all forms of economic trade. Special language has therefore been introduced in some resolutions to ensure that the international sanctions regime complies with IHL obligations and to clarify that humanitarian relief remains out of the scope of sanctions.[108]

Comparing these aforementioned provisions with those relating to civil defence, one may consider the conceptualization of environmental protection actors as humanitarian relief workers as offering a more encompassing protection framework (effectively applicable in both IACs and NIACs, for example). However, viewing environmental protection action as humanitarian relief is not without its shortcomings. First, the trigger for the rules related to allowing and facilitating access to humanitarian relief in the setting of an armed conflict is the need of the civilian population due to a lack of "necessary supplies".[109] While environmental protection activities may provide services of a humanitarian

105 Rome Statute of the International Criminal Court, UN Doc. A/CONF.183/9, 17 July 1998 (entered into force 1 July 2002), Art. 8(2)(b)(iii). See also, with regard to non-international armed conflict, the Statute of the Special Court for Sierra Leone, 16 January 2022 (entered into force 12 April 2022), Art. 4(b).

106 See "Rule 31: Humanitarian Relief Personnel Must Be Respected and Protected", in Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), available at: https://ihl-databases.icrc.org/en/customary-ihl/rules.

107 AP I, Art. 71: "(1) Where necessary, relief personnel may form part of the assistance provided in any relief action, in particular for the transportation and distribution of relief consignments; the participation of such personnel shall be subject to the approval of the Party in whose territory they will carry out their duties. (2) Such personnel shall be respected and protected."

108 See UNSC Res. 2399, 30 January 2018, para. 1(d); UNSC Res. 2593, 30 August 2021, para. 3; UNSC Res. 2582, 29 June 2021, paras 3–4.

109 David Fisher, "Domestic Regulation of International Humanitarian Relief in Disasters and Armed Conflict: A Comparative Analysis", *International Review of the Red Cross*, Vol. 89, No. 866, 2007, p. 368.

character indispensable for the survival of the civilian population, these activities are not generally concerned with providing relief items or supplies to the civilian population. It has also been noted that an overly broad application of humanitarian assistance can undermine the respect (and protection) afforded to humanitarian work.[110] If humanitarian assistance is narrowly defined as only encompassing the provision of relief items, then environmental protection activities would not be considered as falling within the scope of humanitarian assistance, and the protections granted to humanitarian workers would not extend to those engaged in environmental protection efforts.

Independent of whether humanitarian assistance is interpreted in a broad or a narrow sense, ultimately common Article 9/9/9/10 and Article 70 of AP I hold that relief actions which are humanitarian in nature are to be taken in accordance with the acceptance of parties to the conflict.[111] In other words, the meaning of humanitarian assistance may be defined by the parties to the conflict, who could consider environmental protection activities as an appropriate relief action.[112]

Environmentarian corridors

The previous sections have argued that the current provisions under IHL have the capacity to safeguard environmental actors from any form of attack during an armed conflict. Surprisingly, these provisions have not been extensively utilized to advocate for the unimpeded movement of environmental protection actors during armed conflict. One plausible explanation for this limited usage is the lack of awareness surrounding these legal safeguards. This lack of knowledge applies not only to international organizations, national governments, military commanders and non-State armed groups, but also to the environmental protection actors themselves. Conservation organizations, for example, have engaged very little in the conflict and biodiversity nexus, even if they have a crucial role to play.[113] The obstacles that humanitarian actors encounter while delivering aid during armed conflict, including logistical, security, political and legal challenges, may also impede efforts to prioritize the protection of environmental actors.[114] Given the limited recognition that environmental protection activities have under IHL, efforts to mitigate and remediate environmental harm might be even less likely to succeed than traditional humanitarian relief efforts.

110 K. Mackintosh, above note 101, p. 125.

111 Article 70 of AP I holds that "[r]elief actions which are humanitarian and impartial in character and conducted without any adverse shall be undertaken, subject to agreement of the Parties concerned in such relief actions".

112 N. Al-Duaij, above note 3, pp. 470–471.

113 H. Schulte and D. Weir, above note 14.

114 Mariusz Goniewicz and Krzysztof Goniewicz, "Protection of Medical Personnel in Armed Conflicts – Case Study: Afghanistan", *European Journal of Trauma and Emergency Surgery*, Vol. 39, No. 2, 2013; K. Mackintosh, above note 101; D. Fisher, above note 109.

What is therefore needed is a normative shift in the importance attributed to environmental protection activities during armed conflict. Parties to an armed conflict (States as well as non-State armed groups) need to be aware that there is often a pressing need to mitigate and remediate harm as soon as possible after environmental damage has occurred and that there are obligations under IHL to ensure that environmental protection actors have the ability to carry out their activities without having to fear for their security and well-being.

While raising awareness and promoting normative change generally can be done within the remit of promoting sensitization efforts among relevant actors and stakeholders, it requires substantial time and resources, and is contingent upon political will. Therefore, while recognizing the value of sensitization efforts in fostering this change, this article proposes an alternative and complementary strategy to mere sensitization: the introduction and exploration of "environmentarian corridors" as a mechanism for driving environmental protection objectives forward. The following sections will be dedicated to presenting and discussing this concept.

From the humanitarian corridor to the environmentarian corridor

In situations when there has been a need for operational organizations to secure passage through disputed territory and to access emergency areas for the rapid provision of emergency assistance, there have at times been calls for the establishment of so-called "humanitarian corridors".[115] The concept of humanitarian corridors is not defined in IHL, but "the notion is now so frequently invoked that it goes unnoticed in mainstream public discourse despite having no legal basis or strictly agreed upon definition".[116]

Humanitarian corridors exist to protect civilian populations, but are by definition temporary and limited in geographical scope. This has made them subject to criticism,[117] as they are said to undermine existing obligations under IHL to allow impartial aid to reach those in need. Under IHL, humanitarian actors shall be allowed consistent and unhindered access to areas where civilian protection needs are present, independent of time and geographical scope.[118] In reality, however, there are numerous instances where humanitarian aid cannot effectively reach areas where the need for assistance is critical. Despite their many limitations and challenges,[119] humanitarian corridors have been recognized as a

115 Roz Price, *Humanitarian Pauses and Corridors in Contexts of Conflict*, K4D Helpdesk Report, Institute of Development Studies, 17 September 2020.

116 Maelle L'Homme, "Humanitarian Corridors: Negotiated Exceptions at Risk of Manipulation", *Journal of Humanitarian Affairs*, Vol. 4, No. 1, 2022, p. 48.

117 *Ibid.*; Stephanie Nebehay, "ICRC Seeks Humanitarian Corridor in South Ossetia", *Reuters*, 8 August 2008; ICRC, "How Humanitarian Corridors Work to Help People in Conflict Zones", 17 May 2022, available at: www.icrc.org/en/document/how-humanitarian-corridors-work.

118 M. L'Homme, above note 116, p. 48.

119 Key challenges include the need for party agreement and consensus, UN Security Council authorization, a protective military presence and capacity, and blurring of political and humanitarian lines. See "Why Humanitarians Are Wary of 'Humanitarian Corridors'", *The New Humanitarian*, 3 November 2015.

"necessary compromise" and a useful tool for implementing temporary emergency interventions in hard-to-reach areas while advocating for more permanent and broader access.[120]

Humanitarian corridors also play a crucial role in highlighting the significance of humanitarian protection activities during armed conflict. As the establishment of the corridor requires an explicit agreement between the conflict parties, it ensures that involved actors are aware of the humanitarian protection needs. With an agreed-upon corridor, humanitarian actors gain official recognition and permission to access affected areas, minimizing the risk of being denied entry. Given the corridor's limited geographical and temporal scope, monitoring efforts may also become more feasible and resource-efficient compared to the challenging task of ensuring continuous compliance across the entire conflict area.

Similarly to the traditionally considered humanitarian protection needs, environmental protection needs may arise anywhere, at any time. Thus, there should ideally be no temporary or geographical restrictions on environmental protection activities during armed conflict either, as long as they fall under the legal framework reviewed in the previous sections. As previously discussed, however, the realities witnessed on the battleground paint a different picture. Environmental protection actors may, in a similar fashion to humanitarian protection actors, still experience access and security challenges,[121] despite enjoying additional protections under IHL.

One way to address these challenges could therefore be to borrow the concept of the humanitarian corridor and to create a corridor for the purposes of environmental protection – an "environmentarian[122] corridor" of sorts. Such a corridor, established in response to a specific environmental emergency, would serve as a dynamic, targeted zone of protection, ensuring the safety of environmental protection workers tasked with environmental protection activity.

By specifically referring to this corridor as "environmentarian", the unique role and importance of protecting the environment in the context of armed conflict is recognized. While the term "humanitarian" has traditionally been associated with providing assistance to those affected by conflict and disasters, the term "environmentarian" specifically refers to individuals and organizations focused on mitigating and remediating the environmental impacts of conflict. Through the use of a separate term, the distinct needs and challenges faced by those who work to protect the environment in the context of armed conflict are acknowledged, and the need to support their efforts alongside traditional humanitarian work is highlighted.

The reason why the term "environmentarian corridor" should be used is to emphasize that when calling for such a corridor, the protection activities will focus

120 M. L'Homme, above note 116, p. 48.
121 IUCN, above note 59.
122 In a similar way to "humanitarian", "environmentarian" has here been constructed using the word "environment" and the suffix "-arian". This suffix forms personal nouns and indicates a person or thing that advocates for, believes in or is associated with something, in this case the environment.

on the environment (although the corridor will serve to protect humans as well). As noted above, a too-wide application of humanitarian assistance can undermine the respect and protection usually given to humanitarian work,[123] and by using a different term this can be avoided. An environmentarian corridor can also draw upon recent legal developments and momentum with regard to place-based protections and protected ecological zones.[124]

By calling for environmentarian corridors in times of impending environmental emergency during armed conflict, the international community can raise general awareness among both parties to a conflict (including both States and non-State armed groups) about the need to protect actors that engage in environmental protection activities in wartime. Indeed, the normalization of humanitarian corridors in public discourse, through such means as political discussions and media coverage, has brought the plight of civilians during armed conflict to the forefront of the public mind. As previously mentioned, calling for environmentarian corridors as an outreach strategy does not preclude other efforts to raise awareness about obligations under IHL, such as supporting sensitization activities and the wide dissemination of the PERAC Principles that has been called for by the UN General Assembly.[125]

Most importantly, by establishing an environmentarian corridor, parties to a conflict would have to explicitly agree that these actors enjoy additional protection and that they should be enabled to safely carry out their mandate in the designated area where the corridor has been established. Thus, the parties will not only be informed about the existence of these obligations, but will also have to explicitly commit to respecting them. Environmentarian corridors could therefore work as a powerful way to raise awareness about the issue while also promoting protection and safety on the ground. Any violation of the sanctity of these corridors could result in international sanctions or prosecutions, providing a powerful deterrent against breaching the agreement or other IHL obligations.

Environmentarian corridors in practice

It has previously been highlighted that UNEP,[126] the ICRC *Guidelines on the Protection of the Natural Environment in Armed Conflict*[127] and the PERAC Principles[128] encourage the establishment of agreements in which areas of major ecological importance are demilitarized and recognized as protected against attacks during armed conflict. The drafters of the PERAC Principles found support for this approach under IHL in Article 60 of AP I (amongst other

123 K. Mackintosh, above note 101, p. 125.
124 PERAC Principles, above note 48, Art. 4.
125 UNGA Draft Res. A/C.6/77/L.22, 11 November 2022.
126 E. Mrema, C. Bruch and J. Diamond, above note 9, p. 240.
127 ICRC, above note 88, p. 14, para. 14.
128 PERAC Principles, above note 48, Art. 4.

provisions) and Rule 36 of the ICRC Customary Law Study,[129] which are also key provisions in justifying the legal basis for humanitarian corridors under IHL.

Discussions have generally centred around the need to establish these protected zones either before or at the onset of an armed conflict, and with particular focus on the ecological importance or fragility of a given area. An environmentarian corridor would differ from these protected zones in that it would primarily be established for a particular environmental protection purpose that requires the action and presence of environmental protection actors. Instead of representing an all-encompassing demilitarized zone intended to avoid fighting and military damage from occurring within an ecologically fragile area in the first place, an environmentarian corridor can be established in places that usually do not enjoy the status of a demilitarized zone, yet still require environmental protection services.

In terms of implementation, an environmentarian corridor would not differ significantly from its predecessor the humanitarian corridor. There is no agreed-upon legal definition or process for the establishment of humanitarian corridors, but generally it requires the agreement and consent of the parties to the conflict as well as the international community's political will to implement and protect them, including at times a UN Security Council resolution.[130]

Practically, environmentarian corridors would be planned and executed in coordination with all parties to the conflict. This coordination would ideally ensure safe access and egress routes, secure communication lines, and zones free from active warfare for environmental protection workers. Physically marking the corridors and effectively communicating their boundaries would further reduce the risk of accidental infringements, helping to enhance the safety of the workers.

For instance, in the aftermath of an oil spill within a conflict zone, an environmentarian corridor could be rapidly designated around the affected area. Environmental protection teams, under the protective banner of the corridor, could then safely access and work in this defined zone to mitigate the impacts of the spill, recover affected wildlife and commence cleanup operations. Similarly, in response to illegal logging activities or wildfire incidents, an environmentarian corridor could be established to facilitate emergency reforestation efforts or firefighting operations.

Environmentarian corridors could also help to secure critical evidence in assessment and monitoring efforts of environmental impacts of armed conflict. Long-term and severe damages to the environment cannot be established unless due diligence has been conducted on-site, or by any available and recognized means of analysis such as remote sensing techniques, including satellite imagery analysis. Environmentarian corridors may function as a way for actors tasked with conducting environmental impact assessments to access areas where environmental

129 ICRC Customary Law Study, above note 106, Rule 36, p. 120. The ICRC Customary Law Study considers that this constitutes a rule under customary international law and is applicable in both international and non-international armed conflicts.

130 R. Price, above note 115.

damage (potentially) has occurred that may still be in a contested territory or area of fighting, in accordance with PERAC Principle 23 on sharing and granting access to information.[131] This would also include promoting meaningful consultations and feedback mechanisms with affected populations and communities to allow for the establishment of appropriate compensation measures.[132]

Promoting ecocentric protection needs through environmentarian corridors

During armed conflict, situations may arise in which environmental protection activities are warranted not because of the environment's instrumental value to humans, but because the environment has an inherent value that deserves protection. While there is still an ongoing debate among international environmental law and IHL scholars about the extent to which ecocentric motivations for environmental protection should influence international law, it remains clear that both bodies of law include provisions that protect the environment for its own sake, rather than for its relationship with humans.

So far, however, the argument for promoting and establishing environmentarian corridors has primarily departed from the need to strengthen the safety of those carrying out environmental protection activities falling under the civil defence or humanitarian relief framework. A shortcoming of this approach is that it relies heavily on the anthropocentric motivations for environmental protection. Under this framework, environmental protection actors will only be able to benefit from additional protection if it is made clear that the environmental protection activity is effectively safeguarding, protecting and meeting the needs of the civilian population as defined under IHL. In instances where this relationship seems to be less clear, a particular environmental protection activity may not be able to qualify as a civil defence activity or as humanitarian relief.

The benefit associated with advocating for an environmental corridor is that it does not explicitly require environmental protection activities to qualify as civil defence or humanitarian relief. As the corridor is established by agreement between the relevant parties, the primary precondition is that these stakeholders come to a mutual understanding about the specific types of environmental protection initiatives they find acceptable to execute within the established corridor. Thus, there is no explicit technical or legal requirement to link the activity to the fulfilment of civilian needs.

While it may be relatively easier to persuade conflicting parties to establish and ensure the safety of an environmentarian corridor by emphasizing their obligations under IHL to protect environmental protection actors engaged in civil defence or humanitarian relief activities, there may still be instances where parties may be swayed by ecocentric arguments or may acknowledge the necessity of environmental protection efforts beyond the scope of civil defence and humanitarian relief frameworks. Environmentarian corridors could therefore also

131 PERAC Principles, above note 48, Art. 23.
132 *Ibid.*, Arts 5, 24–25.

function as a way to promote environmental protection activities that go beyond what can fall under civil defence or humanitarian relief, and subsequently strengthen overall environmental protection efforts during armed conflict.

Conclusion

In this article, it has been argued that environmental protection actors have a crucial role to play during armed conflict, but that they are facing challenges in carrying out their mandates due to security and access issues. Taking an anthropocentric approach to environmental protection, environmental protection actors can either be seen as part of civil defence organizations or as humanitarian relief actors, and are therefore covered by special protections under IHL. Given the urgent need to respond to environmental harm and damage, efforts to address the issues facing these actors during armed conflict should be encouraged.

However, there is limited awareness of the fact that environmental protection actors are entitled to these protections, making it potentially challenging to implement effective environmental protection measures. Certain environmental protection activities may also fall outside the scope of civil defence and humanitarian relief. To ensure the safety and security of individuals engaged in environmental protection efforts, as well as to allow for other types of environmental protection actions, it is suggested that the international community advocate for the establishment of environmentarian corridors, especially in cases of great environmental emergency. This would allow for the unimpeded movement of environmental protection personnel and resources through contested territory and into emergency areas for the purpose of providing emergency environmental protection assistance. Environmentarian corridors can be seen either as a complement to existing legal provisions, further enhancing protection of environmental protection actors, or as a way to include environmental protection activities that may be justified not on anthropocentric but rather on ecocentric grounds. As a rhetorical device, environmentarian corridors can also serve to heighten general awareness of the importance of environmental protection during armed conflict, drawing vital attention to the need to maintain ecological integrity even in the most tumultuous of circumstances.

Efforts to establish environmentarian corridors may confront similar, if not more arduous, challenges than those encountered when implementing humanitarian corridors. Nevertheless, considering the present planetary crisis and the pressing need for ecological action in times of both conflict and peace, there is an urgent need to find ways in which further environmental destruction can be prevented. To that end, environmentarian corridors represent an avenue worth exploring.

International Review of the Red Cross (2023), **105** (924), 1392–1411.
Protecting the Environment in Armed Conflict
doi:10.1017/S181638312300036X

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Increasing the safeguarding of protected areas threatened by warfare through international environmental law

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Abstract

Vulnerable ecological areas are often seriously impacted by armed conflicts. In theory, these areas could benefit from the safeguards offered by the international humanitarian law (IHL) regimes of "demilitarized zones" and "undefended localities", but in practice, these regimes – which are designed to protect human beings from the violence of hostilities, and whose application entirely depends on the goodwill of belligerents – are rarely triggered to protect the environment as such. However, international environmental law (IEL) contains a rich and diversified normative framework which organizes the establishment and management of areas of major ecological importance. While this framework has

* The author wishes to warmly thank Mattilda Gillis for having reviewed the language of the text.

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not primarily been conceived to apply to war-related situations, it could nonetheless play a substantive role in strengthening the IHL normative regimes in two respects. Firstly, it could provide interpretative guidance for these regimes so that they can be oriented towards more "ecocentric" purposes and can be read in accordance with the most advanced IEL standards and mechanisms governing biodiversity hotspots (the "environmentalization" of IHL). Secondly, IEL norms and practices could directly apply during warfare and thus complement IHL in many respects. That said, the co-application of IEL and IHL raises difficult issues of compatibility between these regimes, requiring inter alia *that the IEL framework governing protected areas be adapted to the needs and specificities of armed conflicts (the "humanitarization" of IEL).*

Keywords: vulnerable ecosystems, biodiversity hotspots, demilitarized zones, undefended localities, protected areas, armed groups, designation and management of protected areas.

Introduction

Vulnerable ecosystems are often adversely affected by warfare. Animals that live in those ecosystems are regularly poached for food or trade, natural resources are overexploited and destroyed, and forest cover is depleted.[1] This harmful situation is usually exacerbated by the fact that conservation measures cannot be readily maintained during hostilities and environmental defenders cannot exercise their functions, as they may be targeted by belligerents.[2] Under international humanitarian law (IHL), biodiversity hotspots could, in theory, benefit from the reinforced protection which is offered to "demilitarized zones"[3] and "undefended localities".[4] Unfortunately, however, these special regimes are very much dependent upon the goodwill of belligerents to create, implement and respect these zones and localities[5] – and such a willingness rarely exists once hostilities have erupted. Also, regrettably, the IHL normative framework of protected areas was originally conceived to protect pieces of land where wounded and sick combatants or civilian populations are located, but not to address the complex

1 International Union for Conservation of Nature (IUCN), *Conflict and Conservation*, Nature in a Globalised World Report No. 1, Gland, 2021, pp. 11–17, available at: https://portals.iucn.org/library/efiles/documents/NGW-001-En.pdf (all internet references were accessed in August 2023).

2 *Ibid.*, p. 14. It should however be noted that "[t]here may also be some positive relationship between the state of warfare and the state of nature: 'gunpoint conservation'", owing, for instance, to the reduction of industrial and economic activities, including deforestation, during conflict. However, the positive effects of warfare on nature are usually temporary.

3 Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 8 June 1977, 1125 UNTS 3 (entered into force 7 December 1978) (AP I), Art. 60.

4 *Ibid.*, Art. 59.

5 *Ibid.*, Arts 59(2), 60(1)–(3).

and multifaceted risks faced by biodiversity hotspots. Thus, despite the devastating consequences that warfare has on these hotspots and neighbouring ecosystems, IHL does not provide the sophisticated measures of prevention and conservation that are required in these circumstances, beyond immunizing certain areas from military operations and attacks.

That being said, over recent decades, numerous environmental conventions have been adopted with the aim of establishing, designing and managing areas of major ecological importance.[6] While these environmental commitments do not seem to apply primarily to war-related situations, they could nonetheless play a substantive role in strengthening minimal IHL regulations in two respects. Firstly, they could provide interpretative guidance for those regulations so that they can be oriented towards a more "ecocentric" objective and can be read in accordance with the most advanced environmental standards and mechanisms governing the establishment and management of areas containing unique ecosystems and endangered species. This first dynamic could ultimately contribute to the "environmentalization" of IHL.[7] Secondly, when directly applied in the context of armed conflict, environmental instruments could have "normative effects" by filling some gaps left by IHL.[8] However, these environmental commitments are usually neither focused on specific environmental risks resulting from armed conflicts, nor adapted to military realities. That explains why, to be effective, they must be reinterpreted in light of underlying IHL rationales. This second dynamic could ultimately lead to the "humanitarization" of international environmental law (IEL).

This article will explore how these two co-related dynamics – the "environmentalization" of IHL and the "humanitarization" of IEL – could concretely take place, and will show that they could have significant theoretical and practical repercussions. From a theoretical angle, they could foster increased consistency and complementarity between the IHL and IEL regimes. From a practical perspective, they could contribute to the building of a comprehensive system of conservation and management of unique ecosystems threatened by military operations.

To illustrate these dynamics, the article will compare how IHL and IEL each protect endangered areas. It will start by outlining the purposes and legal natures of both legal frameworks, and will then conduct a comparative analysis of key concrete

6 See e.g. Convention on Biological Diversity, 1760 UNTS 79, 5 June 1972 (entered into force 29 December 1993) (Biodiversity Convention), Art. 8; Convention for the Protection of the World Cultural and Natural Heritage, 1037 UNTS 151, 16 November 1972 (entered into force 17 December 1975) (World Heritage Convention), Art. 11; Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 996 UNTS 245, 2 February 1971 (entered into force 21 December 1975) (Ramsar Convention), Art. 2; Convention on the Conservation of Migratory Species of Wild Animals, 1651 UNTS 333, 23 June 1979 (entered into force 1 November 1983), Art. III(4).

7 See the normative process described in Raphaël van Steenberghe, "The Interplay between International Humanitarian Law and International Environmental Law: Towards a Comprehensive Framework for a Better Protection of the Environment in Armed Conflict", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022.

8 *Ibid.*

aspects of these frameworks from temporal, geographical, personal and material standpoints. Finally, the article will conclude by outlining general observations on the designing of institutional mechanisms of implementation that are grounded in the IEL and IHL regimes.

Purposes of protected areas

The establishment of protected areas under IHL is very much anthropocentric in nature. In other words, these areas aim at safeguarding human beings: wounded and sick members of armed forces,[9] wounded and sick civilians,[10] and other non-combatant populations.[11] In exceptional circumstances, sites which contain certain objects – those that are of "great importance to the cultural heritage of every people"[12] or that constitute the "cultural or spiritual heritage of peoples",[13] including, under restrictive conditions, specific parts of the environment – benefit from similar safeguards.[14] But, except in these particular circumstances, the main IHL provisions governing protected areas have not been designed to cover the environment as such. This silence is not surprising, since IHL conventions were conceived after the Second World War and during the decolonization process, at a time when environmental considerations had not yet attracted significant attention from States and international institutions, and when the added value of creating protected zones was still unclear.[15]

9 Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of 12 August 1949, 75 UNTS 31 (entered into force 21 October 1950) (GC I), Art. 13 ("Hospitals and Safety Zones").

10 Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War of 12 August 1949, 75 UNTS 287 (entered into force 21 October 1950) (GC IV), Arts 14 ("Hospital and Safety Zones and Localities"), 15 ("Neutralized Zones").

11 AP I, Arts 59, 60.

12 Convention for the Protection of Cultural Property in the Event of Armed Conflict, 249 UNTS 240, 14 May 1954 (entered into force 7 August 1956), Arts 1(a), 4(1). Articles 19(2) and 24 of this convention invite States to conclude special protection agreements to enhance the protection of cultural properties in both international and non-international armed conflicts. Moreover, the 1999 Second Protocol to this convention puts in place a system of enhanced protection for certain cultural properties which are specifically listed. See Second Protocol to the Hague Convention of 1954 for the Protection of Cultural Property in the Event of Armed Conflict, 2253 UNTS 172, 26 March 1999 (entered into force 9 March 2004), Arts 10–12.

13 AP I, Art. 53(a); Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978) (AP II), Art. 16.

14 Due to space limitations, the present paper will not analyze the regime of cultural property as applicable in armed conflicts. While being primarily concerned with "man-made objects", this regime may however offer protection to specific parts of the environment – such as a tree of particular importance or certain archaeological sites – under limited conditions. See International Committee of the Red Cross (ICRC), *Guidelines on the Protection of the Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law, with Commentary*, Geneva, 2020 (ICRC Guidelines), Rule 12 ("Prohibitions Regarding Cultural Property"), paras 166–174, available at: www.icrc.org/en/publication/4382-guidelines-protection-natural-environment-armed-conflict.

15 Karen Hulme, "Armed Conflict and Biodiversity", in Michael Bowman, Peter Davies and Edward Goodwin (eds), *Research Handbook on Biodiversity and Law*, Edward Elgar, Cheltenham, 2016, p. 259.

Having noted this, the IHL notion of protected localities or zones can no longer remain completely isolated from IEL developments where these localities or zones are considered to be essential tools to ensure the conservation and maintenance of ecological processes, especially endangered ecosystems and species.[16] Indeed, as observed by the 2008 *Guidelines for Applying Protected Area Management Categories* of the International Union for Conservation of Nature (IUCN), "[p]rotected areas remain the fundamental building blocks of virtually all national and international conservation strategies, supported by governments and international institutions such as the Convention on Biological Diversity".[17] Furthermore,

> [t]hey provide the core of efforts to protect the world's threatened species and are increasingly recognized as essential providers of ecosystem services and biological resources; key components in climate change mitigation strategies; and in some cases also vehicles for protecting threatened human communities or sites of great cultural and spiritual value.[18]

Accordingly, today, several environmental instruments – such as the Convention on Biological Diversity (Biodiversity Convention),[19] the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention)[20] and the Convention for the Protection of the World Cultural and Natural Heritage (World Heritage Convention)[21] – reflect these preoccupations by containing protected area provisions.[22]

This IEL evolution should prompt IHL to follow a similar path. However, envisaging the creation of a new war-related convention or the modification of existing IHL instruments to achieve this purpose could turn out to be difficult, if not impossible, in practice. Indeed, currently, when States increasingly face serious challenges during warfare, they might not be inclined to increase, through a "legislative process", the protection of environmental needs. Such an IEL orientation could, however, be reflected in the interpretation and application of existing provisions of Additional Protocol I (AP I), which keep non-defended localities or demilitarized zones off-limits to military activities. Yet, as mentioned above and as highlighted in the Commentary on the Additional Protocols, these provisions have originally been designed to preserve human interests in priority.[23]

16 Nigel Dudley (ed.), *Guidelines for Applying Protected Area Management Categories*, IUCN, Gland, Switzerland, 2008, p. 2, available at: https://portals.iucn.org/library/sites/library/files/documents/pag-021.pdf.

17 *Ibid.*, Foreword.

18 *Ibid.*

19 Biodiversity Convention, above note 6.

20 Ramsar Convention, above note 6.

21 World Heritage Convention, above note 6.

22 Ole Kristian Fauchald, "International Environmental Governance and Protected Areas", *Yearbook of International Environmental Law*, Vol. 30, 2019, p. 105.

23 Indeed, as noted by the ICRC Commentary on the Additional Protocols: "In fact, this is the essential character of the zones created in Article 60: they have a humanitarian and not a political aim; they are specially intended to protect the population living there against attack." Yves Sandoz, Christophe Swinarski and Bruno Zimmermann (eds), *Commentary on the Additional Protocols*, ICRC, Geneva,

That said, nothing prevents the application of concepts of protected localities or zones in such a manner as to also promote ecological interests. Indeed, under IHL, belligerents are free to decide on the creation of such localities or zones; I will come back to this point below. It is also worth noting that, in its recent *Guidelines on the Protection of the Environment in Armed Conflict*, the International Committee of the Red Cross (ICRC) emphasizes the importance of employing AP I mechanisms to safeguard certain biodiversity hotspots when it expressly states that

> [a]reas of major ecological importance that could be designated as *demilitarized zones* include groundwater aquifers, key biodiversity areas (which could be national parks or endangered species habitats), ecological connectivity zones, or areas important for coastal protection, carbon sequestration or disaster prevention.[24]

The ICRC also emphasizes that

> [b]y agreeing or declaring a *non-defended locality* – which must be by definition "inhabited" and thus can only be considered for populated areas of the natural environment – a party to a conflict can reduce the risk of exposing a particular locality to hostilities, thus enhancing the protection of both the population and the natural environment in the given area.[25]

In the same manner, in its commentary to Draft Article 40 entitled "Military and Hostile Activities", the IUCN Draft International Covenant on Environment and Development mentions IHL demilitarized zones and non-defended localities as potential solutions for the protection of the environment.[26]

Legal nature of protected areas

Relying solely on the "greening" of non-defended localities and demilitarized zones to strengthen vulnerable ecosystems suffers from an important weakness: under IHL, the creation of these localities or zones depends entirely on the belligerents' will do to so. Indeed, as alluded to previously, there is no obligation under IHL to

1987 (ICRC Commentary on the APs), para. 2303. Furthermore, according to Article 59(2) of AP I, "non-defended localities" must be inhabited to receive protection under IHL. It should, however, be emphasized that paragraph 11 of the *San Remo Manual on International Law Applicable to Armed Conflicts at Sea* encourages belligerents "to agree that no hostile actions will be conducted in marine areas containing: (a) rare or fragile ecosystems; or (b) the habitat of depleted, threatened or endangered species or other forms of marine life". Louise Doswald-Beck (ed.), *San Remo Manual on International Law Applicable to Armed Conflicts at Sea*, Cambridge University Press, Cambridge, 1995.

24 ICRC Guidelines, above note 14, para. 208 (emphasis added).

25 *Ibid.*, para. 207 (emphasis added).

26 IUCN, *Draft International Covenant on Environment and Development of the International Union for Conservation of Nature and Natural Resources*, IUCN Environmental Policy and Law Paper No. 31, Rev. 4, 2015, available at: https://portals.iucn.org/library/sites/library/files/documents/EPLP-031-rev4.pdf. It is worth highlighting that even if non-defended localities and demilitarized zones are not designed to protect the environment as such, when created, they offer indirect protection to the fauna and flora by excluding military activities from taking place in these localities and zones. See Matthew Gillett, "Animals in Protected Zones", in Anne Peters, Jérôme de Hemptinne and Robert Kolb (eds), *Animals in the International Law of Armed Conflict*, Cambridge University Press, Cambridge, 2022, pp. 253–255.

establish undefended localities or demilitarized zones.[27] Belligerents – both States and non-State actors[28] – are merely invited to do so by concluding agreements on the matter.[29] As a result, very few of these areas have been constituted during – or even before – an armed conflict.[30] When situations of violence break out, belligerents are not keen on negotiating with the adversary about the delimitation of such areas or on accepting the curtailment of their powers to further protect individuals.[31] Before the outbreak of armed conflict, identifying the limits of undefended localities and demilitarized zones to protect those who are not, or are no longer, involved in hostilities is complicated by the fact that, by definition, at this early stage, the location of combat operations and of strategic points is still unknown.[32] However, the situation is quite different for environmental areas; indeed, under several environmental treaties, States are now obliged to precisely map and define the perimeters of these areas on the basis of

27 Emanuela-Chiara Gillard, "'Safe Areas': The International Legal Framework", *International Review of the Red Cross*, Vol. 99, No. 3, 2017, p. 1078.

28 ICRC Guidelines, above note 14, para. 206. See also Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), Rule 36, available at: https://ihl-databases.icrc.org/en/customary-ihl/rules. This rule foresees that "[d]irecting an attack against a demilitarized zone agreed upon between the parties to the conflict is prohibited" under customary IHL in both international and non-international armed conflicts.

29 E.-C. Gillard, above note 27, p. 1078. It is interesting to observe that, according to Principle 4 of the International Law Commission (ILC) Principles on Protection of the Environment in Relation to Armed Conflicts, "States should designate, by agreement *or otherwise*, areas of environmental importance as protected zones in the event of an armed conflict, including where those areas are of cultural importance." ILC, *Principles on Protection of the Environment in Relation to Armed Conflicts*, UNGA Res. 77/104, 7 December 2022 (PERAC Principles), Principle 4 (emphasis added). In its commentary to Draft Principle 4, the ILC provides the following explanation: "The types of situations foreseen may include, *inter alia*, an agreement concluded verbally or in writing, or through reciprocal and concordant declarations, as well as those created through a unilateral declaration or designation through an international organization. It is worth noting that the word 'State' does not preclude the possibility of agreements being concluded with non-State actors." ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries*, UN Doc. A/77/10, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2022 (PERAC Commentary), p. 105. In fact, Article 59 of AP I had already envisaged the possibility that "non-defended localities" could be created by way not only of agreements, but also of unilateral declarations.

30 E.-C. Gillard, above note 27, p. 1084.

31 To overcome the lack of willingness of States to identify and safeguard protected areas, it is worth recalling the initiative taken by the IUCN and the International Council on Environmental Law to develop a Draft Convention on the Prohibition of Hostile Military Activities in Protected Areas according to which the UN Security Council, in "[e]ach resolution adopted … to take action under Chapter VII of the Charter, in response to a situation of armed conflicts, shall include a list of the relevant internationally protected areas, thereby designated as non-target areas in which all hostile military activities shall not be permitted during the armed conflict in question" (Art. 2). Thus, the Draft Convention imposes a rather "unusual" obligation upon the Security Council to act in this domain; however, it never came into force. For a critical analysis of the Draft Convention, see Richard T. Tarasofsky, "Protecting Specially Important Areas during International Armed Conflict: A Critique of the IUCN Draft Convention on the Prohibition of Hostile Military Activities in Protected Areas", in Jay E. Austin and Carl E. Bruch, *The Environmental Consequences of War*, Cambridge University Press, Cambridge, 2000.

32 The ICRC Commentary on the APs, above note 23, para. 2308, notes that "it is provided that the agreement may be concluded in peacetime". However, the Commentary goes on to state that, as "it is unlikely that two or more States will agree in advance to keep one or more zones clear of military operations in the event of a conflict breaking out between them", the possibility of the agreement being concluded in peacetime "seems, at least, a rather theoretical point".

objective criteria, or pursuant to the "listing systems" set out in those treaties. For instance, Article 8(a) of the Biodiversity Convention – which is currently ratified by 196 parties – requires States to unilaterally "[e]stablish a system of protected areas or areas where special measures need to be taken to conserve biological diversity". It is true that this obligation is limited by a significant caveat: it applies "as far as possible and as appropriate". Accordingly, it is usually considered to be an "obligation of conduct" imposing a "due diligence standard", rather than an "obligation of result" guaranteeing a specific outcome without a margin of appreciation. This does not mean, however, that this obligation is of a purely political nature.[33] As rightly emphasized by Ole Kristian Fauchald, "[i]t merely indicates that the commitments are subject to countries' ability to perform the duties and that states have broad discretion regarding how to achieve compliance".[34]

In any event, in subsequent practice, States have shown their willingness to treat seriously the obligation – albeit of conduct – to establish protected areas by, for instance, working together in identifying these areas and by adopting a Programme of Work on Protected Areas[35] designed to assist State authorities in the implementation of Article 8(a)– (i). The listing system envisaged by the Ramsar Convention – also ratified by a great number of States (172) – is another example of a clear undertaking by States during peacetime to designate particularly threatened zones. Indeed, under this system, when signing or joining the Convention, States are required to "designate suitable wetlands within [t]heir territor[ies] for inclusion in a List of Wetlands of International Importance" and to "designate at least one wetland to be included in the List".[36] In the same vein, the World Heritage Convention obliges the 195 States Parties, "in so far as possible, [to] submit to the World Heritage Committee an inventory of property forming part of the cultural and natural heritage, situated in [their] territory and suitable for inclusion in the [World Heritage] list".[37] This list, however, only encompasses natural sites that have acquired "significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity".[38] It is worth noting that both the Ramsar Convention and World Heritage Convention include in these lists sites threatened or affected by an armed conflict.

But how could IEL obligations further impact the regulation of warfare if the establishment of undefended localities or demilitarized zones is subject to the consent of States and so is, accordingly, rarely implemented in practice? These environmental obligations could play a role in influencing IHL in two respects.

33 O. K. Fauchald, above note 22, p. 107.
34 *Ibid.*
35 *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Seventh Meeting: VII/28: Protected Areas (Articles 8(a) to (e))*, UN Doc. UNEP/CBD/COP/DEC/VII/28, 20 February 2004, para. 18, available at: www.cbd.int/doc/decisions/cop-07/cop-07-dec-28-en.pdf.
36 Ramsar Convention, above note 6, Arts 2(1), 2(4).
37 World Heritage Convention, above note 6, Art. 11(2).
38 Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage, *Operational Guidelines for the Implementation of the World Heritage Convention*, UNESCO, Paris, 2012, para. 49, available at: https://whc.unesco.org/archive/opguide12-en.pdf.

Firstly, it should be recalled that the establishment of protected localities or zones under Articles 59 and 60 of AP I, respectively, could be treated as a crucial way of implementing the general obligation to take all "feasible precautions against the effects of attacks" enshrined in Article 58 of AP I and in customary international law.[39] In other words, the creation of these areas could be described as constituting an effective method for carrying out the duty to take measures of precaution and, in particular, measures of segregation which require, among other things, the separation of war-related areas from other zones.[40] Furthermore, recent IEL developments with regard to certain protected environmental locations have shown that one of the most effective ways to maintain fragile ecosystems against irreversible damage caused by human activities – including by military operations – is precisely (1) to prevent these activities from taking place in these ecosystems, and (2) to adopt appropriate precautionary measures, such as the clear marking and delineation of certain areas and the communication of relevant information to other States. While it is true that the ICRC has recently recognized that "no rule of IHL currently exists to confer internationally recognized protection on specific natural areas",[41] effectively executing Article 58 obligations of precaution, in light of IEL commitments, necessitates *de facto* the preservation of certain fragile zones – which have been identified by States pursuant to environmental instruments – from all military actions and from the presence of combatants and military equipment. This requirement is nonetheless subject to a "feasibility standard" to which both the obligation to create protected zones under IEL[42] and the obligation to take precautions under IHL[43] are submitted. These obligations are, in reality, very similar in nature, which should facilitate the shaping of one obligation in light of the other.

Secondly, IEL obligations could impact the regulation of protected areas in warfare by directly applying alongside IHL. I will now turn to this complicated issue.

Scopes of application of protected areas

Directly applying IEL regimes governing protected areas during warfare raises the four following delicate and controversial difficulties: the continuing applicability of these regimes between belligerents when hostilities take place; their extraterritorial applicability to invaded and occupied territories; their applicability to non-State actors; and their concrete contributions to IHL norms protecting non-defended localities and demilitarized zones. These issues will be discussed in

39 ICRC Customary Law Study, above note 28, Rules 22–24.
40 See Jean-François Quéguiner, "Precautions under the Law Governing the Conduct of Hostilities", *International Review of the Red Cross*, Vol. 88, No. 864, 2006, p. 819.
41 ICRC Guidelines, above note 14, para. 146.
42 See e.g. Biodiversity Convention, above note 6, Art. 8.
43 AP I, Art. 58.

turn by comparing the temporal, geographical, personal and material scopes of application of both IEL and IHL regimes.

Temporal scopes of application

It is commonly accepted that IHL is the main branch of international law that regulates hostilities as such, while IEL governs pre- and post-conflict situations. This "division of labour" between IHL and IEL along a temporal line is, however, simplistic.[44] Indeed, IHL does not only apply during armed conflicts: it also foresees minimal pre- and post-conflict measures. Article 60 of AP I, on demilitarized zones, is a particularly good example of such measures that apply in peacetime since, as set out above, potential belligerents are invited to conclude all necessary arrangements regarding such zones before the outbreak of a war.[45] The importance of designing, testing and implementing sophisticated safety measures that contribute to preventing damage to biodiversity hotspots in peacetime cannot be overemphasized, as such damage is often irreversible and thus irreparable. This explains why, in its commentaries to the Draft Principles on Protection of the Environment in Relation to Armed Conflicts, the International Law Commission (ILC) has stated that "[w]hile the designation of protected zones could take place at any time, it should preferably be done before or at least at the outset of an armed conflict".[46]

Conversely, IEL instruments do not only relate to peacetime – they apply during warfare unless they expressly provide otherwise.[47] For instance, the World Heritage Convention envisages explicitly that a specific List of World Heritage in Danger must include properties notably threatened by "the outbreak … of an armed conflict".[48] Furthermore, when environmental treaties – like the Biodiversity Convention or the Ramsar Convention – are silent on the matter, they are presumed to keep on applying in these circumstances.[49] That said, even if theoretically applicable, environmental conventions may still contain specific provisions the respecting of which is incompatible with a state of war, such as those inviting signatories to actively cooperate with one another to guarantee the protection of endangered areas.[50] The Biodiversity Convention,[51] the Ramsar Convention,[52] and the World Heritage Convention[53] all contain such provisions regarding good cooperation. The impact of their non-applicability should not, however, be overestimated, for four reasons. Firstly, these provisions only concern

44 Jérôme de Hemptinne, "The Regulation of Hazardous Substances and Activities during Warfare", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2023, p. 1258.
45 AP I, Art. 60(2).
46 PERAC Commentary, above note 29, p. 105.
47 R. van Steenberghe, above note 7, p. 1135.
48 World Heritage Convention, above note 6, Art. 11(4).
49 R. van Steenberghe, above note 7, p. 1137.
50 *Ibid.*, pp. 1139–1140.
51 Biodiversity Convention, above note 6, Art. 8(m).
52 Ramsar Convention, above note 6, Art. 6(2).
53 World Heritage Convention, above note 6, Art. 6(2).

the relationship between parties to the armed conflict.[54] This means that belligerents under whose jurisdiction protected areas are located and States which are not involved in the armed conflict must keep on cooperating to ensure the protection of these areas. Secondly, the suspension of cooperation among belligerents should only apply to war-related incidents or activities taking place in the concerned areas. Therefore, parties to the conflict should, in principle, continue working together to prevent, minimize or respond to damage caused to protected areas that is unrelated to military operations. Precisely delimiting what is connected to such operations and what is not might however raise practical difficulties; for instance, damage resulting from the poaching and trafficking of endangered species located in protected zones could well be done for purposes that are unrelated to an armed conflict, but such poaching and trafficking activities could also be conducted to generate money invested in the acquisition of weapons and ultimately to fuel hostilities. Thirdly, cooperation among States should not be affected by the occurrence of non-international armed conflicts taking place within their territories. Fourthly, it should be recalled, once again, that belligerents involved in non-international or international armed conflicts remain encouraged by IHL to negotiate the establishment of protected zones despite their disagreements. Accordingly, even if in practice this rarely happens, under IHL, cooperation on this important matter should not end with the onset of hostilities.

Territorial scopes of application

When confronted with an international or a non-international armed conflict on their own territories, States are, in principle, obliged to comply with obligations that are contained in environmental treaties with respect to safeguarding fragile zones. It remains unclear, however, whether these States also have extraterritorial duties when they carry out military operations in third-State territories. While the Ramsar Convention and the World Heritage Convention do not set out their jurisdictional scope, the Biodiversity Convention distinguishes between "components of biological diversity" which apply "in areas within the limits of [the State's] national jurisdiction" and "processes and activities" which apply "regardless of where their effects occur, carried out under [the State's] jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction".[55] That being said, at first sight, as observed by Karen Hulme, "the creation of *in situ* protected areas and the conservation of specific components of biodiversity does not appear capable of an extra-territorial reading".[56] This statement should be considered in light of the following two main points.

54 J. de Hemptinne, above note 44, p. 1279.

55 Biodiversity Convention, above note 6, Art. 4.

56 Karen Hulme, "Using International Environmental Law to Enhance Biodiversity and Nature Conservation during Armed Conflict", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2023, p. 1180.

Occupying States should, in principle, safeguard areas that are legally protected in territories under occupation. Indeed, when "effectively controlling" these areas, these States are, in principle, bound to respect the (international) laws and institutions of occupied territories,[57] including those relating to the protection of specific sites. It could even be argued that these States should make necessary changes to local laws to be able to comply with their most fundamental environmental obligations on the matter. Moreover, Principle 19(2) of the ILC Principles on Protection of the Environment in Relation to Armed Conflicts (PERAC Principles) expressly recognizes that "[a]n occupying power shall take appropriate measures to prevent significant harm to the environment of the occupied territory", which could entail creating or maintaining ecological zones if required to avoid causing "harm that is likely to prejudice the health and well-being of protected persons of the occupied territory or otherwise violate their rights".

Determining whether invading States – which do not, as such, exercise "control" over territories under invasion – have environmental duties beyond their national jurisdiction is a more complex and controversial issue. Obviously, fully respecting the far-reaching obligations regarding the conservation and management of protected areas – as required under the terms of the Biodiversity Convention, the Ramsar Convention or the World Heritage Convention – would impose excessive burdens upon belligerents in the extreme circumstances of hostilities. Nevertheless, such practical limits should not allow belligerents to entirely disregard the existence of those areas when fighting abroad. Indeed, on a theoretical level, it could be argued that, over recent decades, the environment has progressively been ascribed a universal normative value which exceeds the constraints imposed by State sovereignty.[58] This recognition could concretely mean, amongst other things, that certain areas receive minimum extraterritorial protection against attacks, especially when destroying or damaging them would affect the ecological balance on a wide scale because, for instance, these areas possess a "trans-frontier" nature or contain shared or unique natural resources.[59] From a legal standpoint, Markus Vordermayer has shown that environmental conventions often have "traces of extraterritoriality".[60] For instance, as noted above, the Biodiversity Convention applies beyond national jurisdiction to "activities" (or "processes") under the "control" of the State. This clause could be interpreted as also encompassing military operations of armed forces carried out under the control of the invading State within the State where protected areas are

57 See PERAC Principles, above note 29, Principles 19(1), 19(3). According to Principle 19(1), "[a]n occupying Power shall respect and protect the environment of the occupied territory in accordance with applicable international law and take environmental considerations into account in the administration of such territory". Principle 19(3) adds that "[a]n occupying Power shall respect the law and institutions of the occupied territory concerning the protection of the environment and may only introduce changes within the limits provided by the law of armed conflict". See also GC IV, Arts 54, 64.

58 Markus Vordermayer, "The Extraterritorial Application of Multilateral Environmental Agreements", *Harvard International Law* Review, Vol. 59, No. 1, 2018, p. 110.

59 *Ibid.*

60 *Ibid.*, p. 83.

situated. While both the World Heritage Convention and the Ramsar Convention lack express provisions on their territorial scope, they contain articles that could be read as indicating that these conventions require States to respect obligations when acting abroad.[61] From a practical perspective, the extraterritorial applicability of specific environmental provisions on protected areas could be facilitated by the fact that most of the obligations referred to in these provisions impose duties of conduct: a State is expected to "do all it can … to the utmost of its own resources",[62] "in so far as possible, and as appropriate for each country".[63] Accordingly, such "feasibility standards" allow a State to adapt the taking of appropriate measures of safeguard in light of the level of control it exercises over a specific fragile environment. It should finally be noted that, under IHL, when setting up protected areas, States remain free to impose upon themselves extraterritorial obligations. Obviously, third parties cannot be bound by such obligations without their consent.[64]

Personal scopes of application

Obligations contained in IEL instruments on the identification and conservation of protected areas are not addressed to armed groups. It is nonetheless increasingly recognized that these groups are bound by international human rights law,[65] particularly when they control part of the national territory and exercise quasi-governmental functions. Although human rights instruments do not formally recognize environmental rights, the protection of the environment has progressively been considered indispensable to guaranteeing the respect of other fundamental rights,[66] such as the right to

61 See Vordermayer's reading of Articles 4 and 5 of the World Heritage Convention (above note 6) and Article 3(1) of the Ramsar Convention (above note 6): M. Vordermayer, above note 58, pp. 97–98.

62 World Heritage Convention, above note 6, Art. 4.

63 *Ibid.*, Art. 5. See also Article 8 of the Biodiversity Convention, above note 6, which uses similar terms: "as far as possible and as appropriate".

64 It is worth noting that the PERAC Commentary, above note 29, p. 155, emphasizes that "[t]he agreement may also contain provisions on the management and operation of the zone. Regarding the form of protection, it is obvious that the *pacta tertiis* rule will limit the application of a treaty to the parties. As a minimum, the designation of an area as a protected zone could serve to inform the planning of parties to an armed conflict such that they do not conduct military operations within the zone, and alert them to take the protected zone into account when applying the principle of proportionality or the principle of precautions in attack in the vicinity of the zone."

65 Marco Sassòli, *International Humanitarian Law: Rules, Controversies, and Solutions to Problems Arising in Warfare*, Edward Elgar, Cheltenham, 2019, p. 490; Andrew Clapham, "Human Rights Obligations of Non-State Actors in Conflict Situations", *International Review of the Red Cross*, Vol. 88, No. 863, 2006, pp. 522–523; Christian Tomuschat, "The Applicability of Human Rights Law to Insurgents Movements", in Horst Fischer, Ulrike Froissart, Wolff Heintschel von Heinegg and Christian Raap (eds), *Krisensicherung und Humanitärer Schutz – Crisis Management and Humanitarian Protection: Festschrift für Dieter Fleck*, Berliner Wissenschafts-Verlag, Berlin, 2004, p. 588; Dieter Fleck, "Humanitarian Protection Against Non-State Actors", in *Verhandeln für den Frieden – Negotiating for Peace: Liber Amicorum Tono Eitel*, Springer, Berlin, 2003, p. 79.

66 Daniil Ukhorskiy, "Environmental Destruction in War: A Human Rights Approach", *EJIL: Talk!*, 19 June 2023, available at: www.ejiltalk.org/environmental-destruction-in-war-a-human-rights-approach/. In this regard, see UNGA Res. A/76/L.75, 26 July 2022, which recognizes "the right to a clean, healthy and sustainable environment as a human right".

life,[67] the right to an adequate standard of living, including food,[68] and the right to "the enjoyment of the highest attainable standard of physical and mental health".[69] Indeed, as acknowledged by the ILC, "[t]here is in general a close link between key human rights, on the one hand, and the protection of the quality of the soil and water, as well as biodiversity to ensure viable and healthy ecosystems, on the other".[70] Furthermore, as shown above, effectively safeguarding ecological systems during wartime often requires the creation of environmental zones as envisaged in IEL, and these zones could well be located in lands that are under the control of armed groups.[71] It is thus essential that not only State authorities but also armed groups protect these zones so as to fully preserve the fundamental rights of populations who live therein. This obligation should be seen in view of the fact that, as discussed in the previous paragraph, environmental commitments regarding protected areas must be implemented to the maximum extent feasible. This flexible aspect of IEL is important in the context of armed groups, whose capacity to respect such obligations may vary widely from one group to another.

Material scopes of application

In this section, I will briefly examine what concrete types of protection are offered by both IEL and IHL environmental frameworks and how they could complement each other. For didactic reasons, I will distinguish between two questions: the identification of environmental zones that require specific protection during wartime, on the one hand, and the definition of adapted pre-, during and post-conflict measures of safeguard on the other. On the first point, we have seen that IHL leaves to States (and possibly to armed groups) the entire responsibility of selecting, delimiting and marking protected areas (by using a specific sign that must be visibly displayed, especially on their perimeters and limits, and on

67 International Covenant on Civil and Political Rights, 999 UNTS 171, 16 December 1966 (entered into force 23 March 1976), Art. 6.

68 International Covenant on Economic, Social and Cultural Rights, 993 UNTS 3, 16 December 1966 (entered into force 3 January 1976) (ICESCR), Art. 11.

69 *Ibid.*, Art. 12.

70 PERAC Commentary, above note 29, p. 162.

71 It should however be highlighted that the regulatory framework regulating protected areas is sometimes in conflict with the right of individuals to freely dispose of their natural resources. Indeed, conservationists have, for a long time, advocated the establishment of protected areas which are free from human occupation. The concerns of local populations are nowadays increasingly taken into account in the management of these areas. See Jérémie Gilbert, "The Right to Freely Dispose of Natural Resources: Utopia or Forgotten Right?", *Netherlands Quarterly of Human Rights*, Vol. 31, No. 3, 2013, p. 339. Indeed, as noted by the World Wildlife Fund (WWF), "there is increasing evidence of the important role that indigenous territories play in the conservation of biodiversity and protection of critical spaces for the maintenance of ecological processes and provision of ecosystem services. Although the main purpose of these territories is to secure the tenure of the ancestral lands of indigenous peoples and safeguard their cultures, the conservation of the biodiversity in their territories is fundamental for their survival and is strongly tied to their livelihoods and to ensuring their access to the natural resources they depend on." WWF, "Protected Areas and Indigenous Territories", available at: https://wwf.panda.org/discover/knowledge_hub/where_we_work/amazon/vision_amazon/living_amazon_initiative222/protected_areas_and_indigenous_territories/.

highways).[72] To precisely identify fragile ecological areas that could be affected by warfare, belligerents could benefit from criteria that have been set up (and concretely applied), pursuant to the Biodiversity Convention, by States Parties, as well as by international and non-governmental organizations. For instance, the IUCN[73] has provided a detailed definition of protected areas[74] and has established, on that basis, a global classification system of such areas[75] which, despite its non-binding nature, "has had significant impact on some international institutions and the majority of countries" in setting up and managing protected zones.[76] This classification system, which is based on management objectives, includes six categories. The first four categories (strict nature reserve[77] and wilderness area,[78] national park,[79] natural monument or feature,[80] and habitat or species management area[81]) are subject to particularly restrictive rules of isolation and conservation which require special attention during warfare. It should nonetheless be emphasized that, although States have agreed to use these categories as part of their commitments under the Programme of Work on Protected Areas referred to above,[82] they still retain a broad discretion about the extent to which they establish such areas.[83] Furthermore, identifying and delimiting zones that need to be spared from hostilities is rendered increasingly complex in a system where there is a great diversity of such zones "in size, age,

72 See AP I, Arts 60(5), 59(4).

73 It is important to highlight that the IUCN "enjoys a special position in the intergovernmental cooperation regarding protected areas and provides a forum for, and link between, governments, management authorities, scientist, NGOs, at other stakeholders at the international and national levels": O. K. Fauchald, above note 22, p. 114. Standards that are set by this institution in the field of protected areas carry important weight among State parties to the Biodiversity Convention: *ibid.*, p. 115.

74 The IUCN provides the following definition of protected areas: "A clearly defined geographical space recognized, dedicated and managed, through legal and other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." N. Dudley, above note 16, pp. 8–9. As noted in O. K. Fauchald, above note 22, p. 117, this definition – which is more precise than the definition contained in Article 2 of the Biodiversity Convention ("a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives") – has received significant endorsement internationally.

75 For a detailed analysis of this classification system, see N. Dudley, above note 16, pp. 13–23.

76 Other tools, such as the United Nations List of Protected Areas (available at: https://wedocs.unep.org/handle/20.500.11822/33388), regularly updated since its creation in 1961, could also constitute a useful tool for that purpose.

77 "Strictly protected areas set aside to conserve biodiversity and, possibly, geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values." N. Dudley, above note 16, p. 9.

78 "Large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition." *Ibid.*, p. 9.

79 "Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities." *Ibid.*, p. 9.

80 "Areas are set aside to protect a specific natural monument, such as a landform, sea mount, a cave or even a living feature such as an ancient grove. They are generally quite small areas and often have high visitor, historical or cultural value." *Ibid.*, p. 9.

81 "Areas dedicated to the conservation of particular species or habitats." *Ibid.*, p. 9.

82 See *Decision Adopted by the Conference of the Parties*, above note 35.

83 O. K. Fauchald, above note 22, p. 119.

purpose, governance, management and outcomes",[84] and where environmental interests often transcend borders and, thus, require the creation of "transboundary conservation areas" and "the establishment and maintenance of cross-border governance structured and cooperative mechanisms".[85] This complexity is reinforced by the fact that the distinction between areas to which restrictive conservation measures apply (through banning or strictly limiting human visitation) and other protected landscapes that "focus on the provision of ecosystem services to local populations and humanity in general"[86] has been increasingly blurred in practice over recent decades. The Ramsar List of Wetlands of International Importance and, especially, the World Heritage List of Sites of Outstanding Universal Value for Humanity, which is submitted to a "rigorous and criteria-driven external validation selection process for listing",[87] could also be useful in this respect. That being said, the scopes of these two systems of protection seem too narrowly defined to constitute a comprehensive framework of reference for the conservation of the many different fragile ecological locations that exist on the planet and that are under threat during wartime.

On the second point – the elaboration of adequate measures of safeguard – IHL only proposes a unique "conservationist approach" by which certain areas are completely sealed off from military operations.[88] This mainly entails the respect of the following four obligations: that combatants, weapons and mobile military equipment are removed from these areas;[89] that fixed military installations and establishments are not used within these areas;[90] that acts of hostility do not take place into or in these areas;[91] and that any activities in support of military operations are not undertaken in these areas.[92] As we have seen in the previous paragraph, environmental instruments envisage similar measures of isolation from certain human activities. In some cases, these measures are even stricter than those contemplated under IHL; for instance, the IUCN category of "strict nature reserve" mentioned above envisages that "human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values".[93] Having said this, pursuant to IEL, States are also invited to contemplate a wide variety of other measures for the conservation and

84 Nigel Dudley, Jeffrey D. Parrish, Kent H. Redford and Sue Stolton, "The Revised IUCN Protected Area Management Categories: The Debate and Ways Forward", *Oryx*, Vol. 44, No. 4, 2010, p. 485.
85 IUCN, above note 1, p. 51. See also the IUCN "Parks for Peace" initiative, available at: www.cbd.int/peace/about/peace-parks/.
86 O. K. Fauchald, above note 22, p. 113.
87 See K. Hulme, above note 56, p. 1170.
88 See Michael N. Schmitt, "Ukraine Symposium – Protected Zones in International Humanitarian Law", *Articles of War*, 24 August 2022, available at: https://lieber.westpoint.edu/protected-zones-international-humanitarian-law/. Of course, this approach does not prevent States from agreeing to other measures that are necessary for the proper management and operation of the concerned zone. See PERAC Commentary, above note 29, Principle 18, para. 5.
89 AP I, Arts 60(3)(a), 59(2)(a).
90 *Ibid.*, Arts 60(3)(b), 59(2)(b).
91 *Ibid.*, Arts 60(3)(c), 59(2)(c).
92 *Ibid.*, Arts 60(3)(d), 59(2)(d).
93 N. Dudley, above note 16, p. 13.

sustainable use of biological diversity which integrate human activities into the management of protected areas. These measures are grounded on general obligations contained in the Biodiversity Convention and in the Ramsar Convention, which respectively require that States "[d]evelop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity",[94] and that they "formulate and implement their planning so as to promote the conservation of the wetlands".[95]

In theory, these multifaceted solutions stemming from environmental instruments regarding natural resource management and conservation (with the involvement of local communities) should be implemented not only when hostilities are already ongoing, but also, and especially, before and after the conflict has taken place. Indeed, the adoption of pre-conflict measures could significantly contribute to improving security and building peace in protected zones. As recently highlighted by the IUCN, "[b]y maintaining ecosystem services, protected areas in any IUCN management category can help to minimize risks of conflict during times of stress by direct contributions to wellbeing or subsistence".[96] IEL could also be a driving force for the taking of adequate restoration and clean-up post-conflict measures in order to adequately address war-related damage that is inevitable in case of military operations. While humanitarian conventions are silent on the matter, Principle 24 of the PERAC Principles encourages relevant actors – including States and international organizations – to cooperate with respect to post-conflict environmental assessments and remedial measures.[97] For example, these actors are invited to identify major environmental risks to fragile fauna and flora resulting from hostilities and to provide recommendations on how to address these risks. It is worth noting that the Biodiversity Convention is even more prescriptive in this respect since it obliges States Parties – albeit within the limits of their abilities – to "[r]ehabilitate and restore degraded ecosystems and promote the recovery of threatened species, *inter alia*, through the development and implementation of plans or other management strategies".[98] Obviously, these plans and strategies should be tailored to the specific nature of the destruction caused by the conduct of hostilities.[99]

94 Biodiversity Convention, above note 6, Art. 8(b). This entails that the restrictive conditions imposed by this IUCN category – where human visitation is strictly limited – would not be compatible with the regime of non-defended localities under Article 59(2) of AP I: as we have seen above, such localities must by definition be inhabited, so the regime can only be considered for populated areas of the natural environment. In this context, the only applicable regime would thus be "demilitarized zone".

95 Ramsar Convention, above note 6, Art. 3(1).

96 IUCN, above note 1, p. 39.

97 PERAC Principles, above note 29, Principle 24.

98 Biodiversity Convention, above note 6, Art. 8(f).

99 As recognized by the IUCN, above note 1, p. 55, "[a] second key implication of the complex interconnections between nature and conflict is the importance of conservation engagement in post-conflict situations. In some cases, warfare may alleviate threats to biodiversity, for example through the cessation of economic activities such as agricultural development, forestry, and fishing, as well as through the role military bases may serve as de facto protected areas. However, any such benefits tend

When hostilities are ongoing, the continuing application of the IEL framework of management and conservation of protected areas is essential to minimizing the harmful ecological consequences of war. This affirmation calls for nuanced observations. If the above conditions to seal off protected localities or zones from military operations are not respected, or the terms of the agreement between belligerents are breached, IHL provisions expressly recognize that military interests should prevail by allowing the other party to be released from its own obligations under the initial agreement.[100] In the same vein, in its PERAC Principles, the ILC grants protection against attacks to protected zones designated by agreement, "except insofar as [they] contain a military objective".[101] In such an eventuality, concerned localities or zones lose their status but shall continue to enjoy the general protection offered by IHL rules, such as those governing precaution,[102] distinction[103] and proportionality.[104] At the same time, however, targeting military objectives located in protected areas would seem to always run counter to the management and conservation obligations contained in environmental instruments which forbid States from conducting activities likely to cause harm to these areas. For instance, Article 6(3) of the World Heritage Convention formally prohibits any State party to the Convention from "tak[ing] any deliberate measures which might damage directly or indirectly the [listed] cultural and natural heritage situated on the territory of other States Parties to [the] convention", and this would obviously include targeting such heritage. Although the Biodiversity Convention and the Ramsar Convention do not contain a similar explicit prohibition, attacking protected zones is, without doubt, incompatible with the spirit of these conventions and the obligations of conservation that they impose on their signatories.

Would this entail that, by virtue of this explicit or implicit prohibitions, belligerents are always prevented from undertaking any military operations in these circumstances? This would appear unreasonable for most States, especially when they are combating rebel groups located within protected areas who are trying to destabilize their powers. In certain circumstances, fighting these groups might even be required to secure other legitimate interests – for example, such operations might be needed to protect forests against overexploitation, to

to be temporary, with waves of unconstrained development that often follow warfare quickly overwhelming any short-term reduction in pressures on nature. Natural resources such as wildlife and timber can often be the most easily available sources of revenue for reconstruction efforts, and so pressures on nature can be extremely high in post-conflict situations. Therefore, redirecting conservation action in the post-conflict context, for example through the application of nature-based solutions, is a key determinant of the long-term persistence of living nature in war-stricken regions."

100 AP I, Arts 60(7), 59(7).

101 PERAC Principles, above note 29, Principle 18. It is worth noting in this respect that, in its commentary to Draft Principle 18 (PERAC Commentary, above note 29, p. 154), the ILC observes that "[t]he phrase 'except insofar as it contains a military objective' is intended to denote that it may be the entire zone, only parts thereof, or objects located within the zone that become military objectives and lose the protection from attack".

102 AP I, Arts 57, 58.

103 *Ibid.*, Art. 52.

104 *Ibid.*, Arts 51(5)(b), 57(2)(a)(3).

safeguard park defenders against attacks, or to guarantee that endangered species are not poached or killed. In any case, as noted by Karen Hulme, "in practice, states do not appear to have interpreted Article 6(3) [of the World Heritage Convention] as a bar to … military actions".[105] Moreover, the flexible nature of the obligations contained in the Biodiversity Convention[106] and the Ramsar Convention[107] – which, as just recalled, do not contain a similar prohibition – allows, when absolutely necessary, for the application of IHL rules on the conduct of hostilities in case of warfare.[108]

This does not, however, mean that environmental considerations should be completely set aside in these circumstances. In accordance with the principle of systemic integration, IHL norms on the conduct of hostilities should be interpreted in light of "other relevant rules of international law applicable in the relations between parties",[109] including those relating to the establishment and management of protected areas contained in the above-mentioned conventions that have been widely ratified.[110] Concretely, such an environmental reading of IHL could entail, for instance, that the damage caused by military operations to the fauna and flora that is located in protected areas be ascribed a particularly heavy weight in the proportionality calculation that is needed to determine whether such damage is excessive under Articles 51(5)(b) and 57(2)(a)(3) of AP I (in international armed conflicts) or under customary IHL (in non-international armed conflicts).[111] Furthermore, military objectives situated at, or in the vicinity of, these protected areas could be narrowly defined as those which make not simply an effective contribution to military action as required for traditional military objectives,[112] but a "regular, significant and direct contribution" to such an action as required for certain specially protected objects, such as works and installations containing dangerous forces.[113] The rule of precaution in attack could also be interpreted as compelling that the targeting of such objectives be the only feasible way to terminate such contribution and that decisions on the matter be taken at a high level of command.[114]

105 K. Hulme, above note 56, p. 1183.
106 Biodiversity Convention, above note 6, Art. 8(a).
107 Ramsar Convention, above note 6, Arts 3, 4.
108 K. Hulme, above note 56, p. 1184.
109 Vienna Convention on the Law of Treaties, 1155 UNTS 331, 23 May 1969 (entered into force 27 January 1980), Art. 31(3)(c).
110 Given the wide variety of protected areas that could be established under IEL, a differentiated approach could be envisaged. Some protected areas – for instance, those belonging to the four categories mentioned above – could be submitted to more stringent conditions of conduct of hostilities than other areas which require less protection. This issue should be further studied.
111 ICRC Customary Law Study, above note 28, Rule 14. See Britta Sjöstedt, *The Role of Multilateral Environmental Agreements: A Reconciliatory Approach to Environmental Protection in Armed Conflict*, Hart, Oxford, 2020, p. 234.
112 See AP I, Art. 52(2).
113 See *ibid.*, Art. 56(2).
114 See K. Hulme, above note 56, p. 1168.

Concluding institutional observations

As a final note, it should be highlighted that recognizing the applicability of environmental multilateral conventions protecting biodiversity hotspots to all concerned actors, before, during and after hostilities, brings with it an important consequence: the institutional framework that flows from these conventions (such as the IUCN, the World Heritage Committee, and the Ramsar Standing Committee and Secretariat), as well as its administrative regime and decision-making process,[115] could play an active role in helping these actors to precisely identify protected zones in need of special attention in case of warfare, to shape appropriate measures of conservation and management of these zones, and to guarantee their application and respect in practice.[116] Exercising these functions can be examined from the two perspectives studied above. On the one hand, from an IHL angle, when agreeing on the establishment and governance of protected zones, States and non-State actors could formally decide to entrust some or all of the above responsibilities to these environmental institutions or, at least, to involve them in their implementation. It is worth mentioning in this regard that both Geneva Conventions I and IV contain in annexes quasi-identical draft agreements which aim at guiding belligerents when establishing hospital zones and localities.[117] These agreements specifically foresee the placing of these zones and localities under the control of one or more "Special Commissions" "for the purpose of ascertaining if they fulfil the conditions and obligations stipulated" in those agreements.[118] These supervisory functions could well be entrusted to environmental organs set up by environmental instruments or to newly created commissions that work in close collaboration with – or under the supervision of – these organs. On the other hand, from an IEL standpoint (which is particularly relevant since, as previously mentioned, belligerents rarely agree on protected areas), when interpreting and applying provisions of environmental treaties, or when issuing principles, operational guidelines and best practices pursuant to these treaties,[119] environmental institutions could develop and apply specific standards tailored to the needs of zones threatened by hostilities.[120] In this context as well, those institutions could increasingly perform monitoring functions to ensure the respect of IEL (and IHL) rules governing protected areas which are put under pressure – and often violated – because of warfare.

115 For the precise functions exercised by these institutions regarding protected areas in general, see O. K. Fauchald, above note 22, pp. 105–133.

116 This is of particular importance because, as highlighted in K. Hulme, above note 56, p. 1187, "[u]nder several of the conventions there is a support system provided by the treaty bodies that may be able to alleviate the governance vacuum that frequently accompanies conflict, and which has devastating impacts on nature".

117 For a short study of these draft agreements, see E.-C. Gillard, above note 27, pp. 1080–1081.

118 See Draft Agreement Relating to Hospital Zones and Localities, Annex I to GC I, Arts 8, 9; Draft Agreement Relating to Hospital and Safety Zones and Localities, Annex I to GC IV, Arts 8, 9.

119 For the many different roles of the IUCN, see O. K. Fauchald, above note 22, p. 115.

120 This is precisely what the IUCN does in its *Conflict and Conservation* report, above note 1.

International Review of the Red Cross (2023), **105** (924), 1412–1440.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000450

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Protected zones in context: Exploring the complexity of armed conflicts and their impacts on the protection of biodiversity

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† Funding for Andrew J. Plumptre is provided by the KBA Partnership and the Bezos Earth Fund.

The advice, opinions and statements contained in this article are those of the author/s and do not necessarily reflect the views of the ICRC. The ICRC does not necessarily represent or endorse the accuracy or reliability of any advice, opinion, statement or other information provided in this article.

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Abstract

Protected areas safeguard biodiversity of global ecological importance, even throughout armed conflicts. The International Law Commission's Principles on Protection of the Environment in Relation to Armed Conflicts propose that certain ecologically important areas could be designated as protected zones during armed conflicts. This article uses a geospatial analysis of armed conflicts and Key Biodiversity Areas and three case studies to inform recommendations on how the protection of ecologically important areas could be enhanced through visibility, local actors and international stakeholders as part of a broader interpretation of a protected zone.

Keywords: Key Biodiversity Areas, protected areas, armed conflict, armed groups, international humanitarian law, conservation, PERAC Principles.

Key Biodiversity Areas and armed conflict: Aligning protected area and protected zone policies

The end of 2022 marked an important moment for international environmental and humanitarian law, with the adoption of principles and policies intended to protect the environment from some of the worst of human harms – in particular, from environmental degradation, biodiversity loss and the effects of climate change, in addition to the violence of armed conflict and warfare. On 7 December 2022, the United Nations (UN) General Assembly adopted twenty-seven Principles on Protection of the Environment in Relation to Armed Conflicts (PERAC Principles) recommended by the International Law Commission (ILC).[1] Shortly after, on 18 December 2022, the 15th Conference of Parties to the UN Convention on Biological Diversity (CBD) adopted the Kunming-Montreal Global Biodiversity Framework to halt and reverse biodiversity loss.[2] Climate change, pollution and biodiversity loss are considered the "Triple Planetary Crisis" by the UN Framework Convention on Climate Change.[3] These codifications of legal principles and conservation objectives intersect in the recognition of territory- or area-based protection of the natural environment through what the ILC refers to as "protected zones" and the CBD calls "protected areas" and "other effective area-based conservation measures" (OECMs). OECMs encompass different effective management options that support conservation objectives besides protected areas, such as private ownership of land and community reserves.

1 UNGA Res. 77/104, "Protection of the Environment in Relation to Armed Conflicts", 19 December 2022.
2 UN Environment Programme (UNEP), *Kunming-Montreal Global Biodiversity Framework*, Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity, UN Doc. CBD/COP/DEC/15/4, 19 December 2022.
3 UN Framework Convention on Climate Change, "What Is the Triple Planetary Crisis?", 13 April 2022, available at: https://unfccc.int/blog/what-is-the-triple-planetary-crisis (all internet references were accessed in April 2023).

Places of ecological and cultural importance have long been designated as protected areas (e.g., elephant sanctuaries in India in the fourth century BC, or imperial hunting reserves in China in the third century BC)[4] and now provide a global framework for safeguarding the world's biodiversity, as well as supporting climate mitigation strategies and the protection of human communities and cultural sites. There are various categories and types of protected areas (e.g., national parks, marine reserves), but they are all linked with a common objective of conserving nature.[5] Over the last century, it has also been argued that certain protected areas should be places of peace (i.e., peace parks), protected areas dedicated to peaceful relations and cooperation in addition to biodiversity conservation.[6] The two PERAC Principles on protected zones are the latest incarnation of an idea that emerged in the 1970s and which has again come to prominence in the context of increased attention on the environmental dimensions of armed conflicts and the accelerating crisis of global biodiversity loss.

The PERAC Principles provide that "States should designate, by agreement or otherwise, areas of environmental importance as protected zones in the event of an armed conflict, including where those areas are of cultural importance" (Principle 4), and that these protected zones "shall be protected against any attack, except insofar as [they contain] a military objective", with the possibility that additional protections may also be negotiated (Principle 18).[7] In its commentaries to the PERAC Principles, the ILC suggests at least two types of protected areas that could qualify as protected zones: World Heritage Sites and internationally agreed protected areas.[8]

While the focus is often on the physical damage that protected areas can suffer during conflicts, the relationships between conflicts and ecologically important areas can be more complex. In international armed conflicts, transboundary or border-adjacent protected areas can be part of a disputed international border and may be securitized to enforce territoriality, or they can be afflicted by cross-border incursions and occupied in annexations. Even in non-international armed conflicts, protected areas in a neighbouring country can be affected by spillover activities between armed groups or become throughways for displaced peoples. Directly or indirectly, protected areas can also be impacted by secondary effects of armed conflict, such as shifts in conflict economies that may increase pressure on natural resources and decrease resources for conservation, or as emphasized in this article, the displacement and temporary or long-term resettlement of people. In line with the PERAC Principles' temporal framework,

4 Jianchu Xu and David R. Melick, "Rethinking the Effectiveness of Public Protected Areas in Southwestern China", *Conservation Biology*, Vol. 21, No. 2, 2007.

5 Nigel Dudley (ed.), *Guidelines for Applying Protected Area Management Categories*, International Union for Conservation of Nature (IUCN), Gland, 2008.

6 Gerardo Budowski, "Peace through Parks", *Our Planet*, Vol. 14, No. 4, 2004.

7 ILC, *Text and Titles of the Draft Principles Provisionally Adopted by the Drafting Committee on First Reading*, UN Doc. A/CN.4/L.937, 6 June 2019, Principles 4 and 18.

8 ILC, *Report of the International Law Commission: Sixty-Eighth Session*, UN Doc. A/71/10, Supp. 10, 2016.

this article identifies approaches that may be taken before and during, as well as after, armed conflict.

An important standard that protected areas and OECMs should meet in order to be considered for designation as a protected zone, and thus benefit from enhanced protection during different stages of armed conflict, is as "areas of environmental importance …, including where those areas are of cultural importance".[9] Key Biodiversity Areas (KBAs) are "sites of importance for the global persistence of biodiversity"[10] and can be culturally important, especially at the national level. KBAs are identified at country level by States using a set of eleven criteria, published in an International Union for Conservation of Nature (IUCN) Global Standard, applied to data that each country holds on its biodiversity.[11] KBA criteria are used to identify that a site contains a globally significant proportion of the population of a species or extent of an ecosystem.[12] KBAs can become protected areas or be conserved through OECMs, and the proportion of KBAs covered by protected areas or OECMs is an indicator for the CBD and the Sustainable Development Goals.

This article is informed by a geospatial analysis overlaying data on the location of armed conflict events with data from the World Database of Key Biodiversity Areas (WDKBA) in order to analyze the global extent of armed conflict impacts on these sites. More specific empirical analyses within the article highlight the intersection and impact of armed conflicts in specific protected areas in the Greater Virunga Landscape (in the Democratic Republic of the Congo (DRC), Rwanda and Uganda), South Sudan and Ukraine. Drawing from these case studies, we offer a set of recommendations addressing (1) protection through visibility, (2) protection through local actors, and (3) protection through international stakeholders. These findings will support the work of those wishing to develop the concept of protected zones further and to build on the emerging literature on the recognition of protected areas as protected zones.[13]

Armed conflicts and the environment: Understanding impacts on KBAs

Understanding the impacts of armed conflict on the environment from the perspective of biodiversity, which then defines areas of conservation importance such as KBAs, reveals an area of study that would benefit from some nuance or differentiation from other related literatures.[14] This topic should not be confused

9 ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries*, UN Doc. A/77/10, 2022.

10 IUCN, *A Global Standard for the Identification of Key Biodiversity Areas*, Version 1.0, 2016, p. 8.

11 *Ibid.*, p. 9; see also the Key Biodiversity Area Partnership website, available at: www.keybiodiversityareas.org/.

12 IUCN, above note 10.

13 Elaine C. Hsiao, "Protecting Protected Areas in Bello: Learning from Institutional Design and Conflict Resilience in the Greater Virunga and Kidepo Landscapes", *Goettingen Journal of International Law*, Vol. 10, No. 1, 2020.

14 Gary Machlis and Thor Hanson, "Warfare Ecology", *BioScience*, Vol. 58, No. 8, 2008.

with broader studies in armed conflict and the environment or environmental security, which often examine environmental factors as contributing to tensions that may lead to conflict, whether over competition for control of natural resources for economic advantage or as scarcity-driven conflict.[15] While broader environmental security scholarship does help to decipher the motivation for control over areas where resources exist and how their associated trade routes play a part in armed conflicts, it leaves out the impacts of those activities on biodiversity and natural habitats. In other research on the broader environmental impacts of conflict cycles (military or humanitarian), which have led to calls for "greening the Blue Helmets" and the military industry, the focus again diverts from biodiversity conservation and often emphasizes sustainable technologies (e.g., renewable energy and waste management).[16]

While all of the above can affect protected areas and OECMs, this study focuses on the current literature on the impacts of armed conflicts on biodiversity, in areas of global significance for biodiversity (KBAs), in order to inform the development of effective measures for implementing PERAC Principles 4 and 18 in protected zones. With a brief examination of how different types of conflict have differing impacts on biodiversity, a key factor that emerges is how armed conflict affects the management of protected areas and not just biodiversity alone.

Direct and indirect impacts on biodiversity and KBAs

Central to various analyses are definitions of "direct" and "indirect" impacts of warfare on biodiversity, sometimes defined respectively as what occurs on the battlefield as opposed to that which occurs away from the battlefield but is a consequence of armed conflict.[17] Research that has examined a broad range of impacts worldwide (but with a focus on Africa, Asia and the Middle-East) shows that there are twice as many impacts[18] related to non-military consequences of armed conflict (often indirect) as there are to military activities (both direct and indirect), although there are grey areas as to what constitutes military activity, and this requires further clarification.[19] Conflicts do not just impact biodiversity, putting pressure on wildlife and habitats; they also impact the management of protected areas and those responsible for keeping them safe and regulated. Gaynor *et al.* highlight complex pathways that link conflict to wildlife habitats and populations,[20] drawing out the

15 Christopher Mitchell, *The Nature of Intractable Conflict: Resolution in the Twenty-First Century*, Palgrave Macmillan, London, 2014, pp. 28–30.

16 Linsey Cottrell, *EU Military Greening Policies: A Review of Transparency and Implementation*, Conflict and Environment Observatory (CEOBS), January 2023; UNEP, *Greening the Blue Helmets: Environment, Natural Resources and UN Peacekeeping Operations*, May 2012.

17 Kaitlyn M. Gaynor *et al.*, "War and Wildlife: Linking Armed Conflict to Conservation", *Frontiers in Ecology and the Environment*, Vol. 14, No. 10, 2016.

18 *Ibid.*, Table 1, provides a useful comparison of pathways through which armed conflict affects wildlife.

19 Jay E. Austin and Carl Bruch (eds), *The Environmental Consequences of War: Legal, Economic, and Scientific Perspectives*, Cambridge University Press, Cambridge, 2000.

20 K. M. Gaynor *et al.*, above note 17.

need to better understand how and why the practice of war negatively affects both biodiversity and the practice of protected area management.

As the mapping analysis that follows shows, there are frequent instances of camps for internally displaced persons (IDPs) and refugees being established in the vicinity of KBAs, and as the case studies illustrate, places like this can lead to further environmental harm, such as the subsequent depletion of forests for cooking fuel and pressure on wildlife for bushmeat.[21] It could be argued that many of these threats emerge from complex issues concerning civilian actions, and thus that they often lie beyond the remit of international humanitarian law. They can also occur at different stages of the cycle of conflict.

Changes in warfare: Differentiating types of armed conflict, actors and activities

An examination of different types of armed conflict, actors and activities can highlight the causation of a broad spectrum of impacts on biodiversity that differ in time, space and intensity. An agreed multi-disciplinary framework for analysis could bring much-needed clarity and shed light on what might be done to enhance biodiversity protection through protected zones in both international and non-international armed conflicts. Most research on the impacts of armed conflicts on protected areas has focused on the global South because of its stereotypically iconic biodiversity and protected areas, mixed with ongoing histories of wars of liberation or civil conflicts in its post-independence era. The proliferation of small arms and light weapons from this era has become a major issue in relation to wildlife poaching during and after conflict.[22] Some literature notes that conflict "plays out in remote areas",[23] but there is less evidence of this in contemporary conflicts, where the emphasis is on securing political (and therefore urban) population centres and infrastructure, the latter of which may be in peripheral areas.[24] More recent armed conflicts have brought new technology such as drones to the battlefield, which now spans low- to high-intensity warfare. High-intensity warfare backed with technology can bring a scale of destruction to biodiversity that is very different to bush wars where the AK47 dominated. Responses aimed at protecting biodiversity need to be tailored to address these myriad situations.

Asymmetric warfare presents other impacts. In the western Sahel, non-State armed groups utilize the cover provided by remote protected areas and disenfranchised human populations living in these rural and often peripheral

21 *Ibid.*

22 José Carlos Brito *et al.*, "Armed Conflicts and Wildlife Decline: Challenges and Recommendations for Effective Conservation Policy in the Sahara-Sahel", *Conservation Letters*, Vol. 11, No. 5, 2018; Franciany Braga-Pereira, Juliano André Bogoni and Rômulo Romeu Nóbrega Alves, "From Spears to Automatic Rifles: The Shift in Hunting Techniques as a Mammal Depletion Driver during the Angolan Civil War", *Biological Conservation*, Vol. 249, September 2020.

23 Thor Hanson *et al.*, "Warfare in Biodiversity Hotspots", *Conservation Biology*, Vol. 23, No. 3, 2009.

24 Karen Büscher, "African Cities and Violent Conflict: The Urban Dimension of Conflict and Post Conflict Dynamics in Central and Eastern Africa", *Journal of Eastern African Studies*, Vol. 12, No. 2, 2018.

areas to provide secure bases and recruitment.[25] This creates significant challenges for national armies and international coalitions with regard to preventing protected area personnel from becoming embroiled in the conflict, a risk that might compromise the role of park rangers as "neutral actors", as is required to sustain protected zone status.[26] The effects of this type of asymmetric conflict on biodiversity are yet to be understood, although loss of tourism revenue and thus conservation financing is certainly one.

The reduction in patronage-based military equipment after the Cold War drove armies and non-State armed groups to secure their military funding from natural resource extraction, with a negative impact on wildlife and protected areas that lasts long after the formal cessation of hostilities. This continued through the use of proxy wars and the emergence of new patronages, agreements that are often dependant on the provision of natural resources. Conflict economies premised on natural resource extraction have knock-on effects on protected area management. In some cases, the resource can be so vital that a KBA is targeted, as is often the case with securing oil fields. As another example, Zimbabwean soldiers sent to contain the violence in Mozambique's civil war have been accused of depleting the elephant population in Gorongosa National Park for ivory.[27] The greatest threat to KBAs in armed conflict can come from biodiversity loss through, for example, the illicit trade of timber, mining of minerals or hunting of wildlife. There are nuances to this issue between international armed conflicts, where one State plunders another's resources for its own gain, and non-international armed conflicts; in both cases, however, the extraction is often a criminalized activity that sustains armed conflict. A key point is that the threat which such extraction represents to biodiversity and protected area management often changes throughout the cycle of these conflicts. As the insecurity presented by an armed conflict subsides, and prior to the establishment of good governance, conditions exist that can be associated with high levels of resource extraction.[28] Wartime resource exploitation undermines the economic development that can be promoted in post-conflict recovery and reconstruction.

Armed conflict and conservation actors

By their nature and for their own protection, biodiversity and protected areas often exist in more remote areas, not in urban centres. Theorists of modern warfare discuss wars "amongst the people"[29] and in cities in the "urbanised, networked

25 International Crisis Group, *Containing Militancy in West Africa's Park W*, Africa Report No. 310, 26 January 2023.

26 ILC, above note 9, pp. 154–155.

27 John Hatton, Mia Couto and Judy Oglethorpe, *Biodiversity and War: A Case Study of Mozambique*, Biodiversity Support Program, 2001.

28 Nelson Grima and Simron J. Singh, "How the End of Armed Conflicts Influence[s] Forest Cover and Subsequently Ecosystem Services Provision? An Analysis of Four Case Studies in Biodiversity Hotspots", *Land Use Policy*, Vol. 81, February 2019.

29 Rupert Smith, *The Utility of Force: The Art of War in the Modern World*, Vintage Books, New York, 2008, pp. 267–269.

littorals".[30] In this context, the role, recruitment and employment of conservation actors, in particular protected area rangers, needs careful examination. For various reasons, rangers are often recruited from local communities in proximity to the protected area; this is particularly the case when upholding principles of equity and inclusion in local conservation governance. This can put park staff at odds with the cities/urban centres and their governments – for example, in the civil wars on the African continent that have been fought over "government-held urban centres with rebels controlling the bush".[31] In South Sudan, at times when civil conflicts escalate, park rangers have allegedly abandoned their posts to rejoin armed groups on different sides of the conflict, sometimes under threats or other pressures, including ethnic or identity-based affiliations.[32]

Aside from direct conflict engagement, protected area staff may have militarized or paramilitary roles, may use military equipment, and are often aligned with or perceived as an institution in the national security sector.[33] In international armed conflicts, personnel and equipment intended for conservation activities may be utilized to fight the war. In Ukraine, for example, the vehicles, weapons and equipment used by park rangers have allegedly been consumed by the national war effort, to which many rangers have also turned.[34] In non-international armed conflicts, protected area staff can find themselves on an opposing side to the State government, and conservation management risks becoming embroiled in political conflict. Closer examination is needed in areas of asymmetric conflict, such as in the western Sahel, where wildlife rangers may be lured into taking sides in a political conflict in the process of protecting biodiversity. In the DRC, it has been argued that non-State armed groups seize control of protected areas, many of which are KBAs, partly to exercise and demonstrate their authority in contrast to what may be perceived as a corrupted or failed State.[35] In order to sustain conservation activities in those territories, protected area authorities have at times negotiated with non-State armed actors, distinguishing themselves from the rest of the State apparatus.[36]

There is a history of and need for those with protected area management experience to be involved in the negotiation of protected zones. These individuals bring knowledge of politics on the ground in and around the KBAs or protected areas, and of the dynamics of territorial and natural resource control. A perspective from the protected zone outwards, rather than the view from the city, might prevent

30 David Kilcullen, *Out of the Mountains: The Coming of Age of the Urban Guerrilla*, Hurst, London, 2015.
31 Adrian Garside, "Achieving Effective Biodiversity Protection during War and Armed Conflict", *RUSI: Forward Look*, 10 December 2021.
32 Author interviews with Ministry of Interior and Wildlife Conservation, Juba, 2014 (on file with authors).
33 For example, in South Sudan and Southern Sudan prior to independence, the Wildlife Service held a dual role as manager of the protected areas and as one component of the "organized forces" with security duties alongside the army, police, prison and fire services.
34 Author interview with Jody Bragger, Tellus Reserves, Oxford, October 2022 (on file with authors).
35 Esther Marijnen, "Public Authority and Conservation in Areas of Armed Conflict: Virunga National Park as a 'State within a State' in Eastern Congo", *Development and Change*, Vol. 49, No. 3, 2018.
36 For example, Fauna and Flora International (FFI) worked across the conflict fault line in South Sudan's civil war.

a protected zone designation that facilitates a military-led operation. It can also identify the utility of protected area management in post-conflict peacebuilding.

Funding for conservation is another area that lacks consistency, except for the recognition that there is a funding gap. Many countries, especially those facing instability and prone to conflict, are reliant on international donor support to maintain the management of biodiversity areas. The World Bank's *Collaborative Management Partnership Toolkit* provides some structure for models of collaboration between conservation organizations and national governments for the management of protected areas.[37] It draws from research focused on Africa, where funding is traditionally delivered through international conservation organizations co-managing protected areas in partnership with the government. When armed conflict starts, these relationships become fragile for a variety of reasons, including association with government rangers when there are concerns over that government's legitimacy; issues of staff safety and security; and the imposition of highly restrictive funding measures. As a result, international conservation organizations have often departed or frozen programming despite the needs of local staff who may remain. New models for funding the protection of biodiversity and the management of protected areas, from public–private partnerships to private financing or statutory government donors and charities, bring different opportunities and risks for tackling conservation in conflict-affected KBAs.

In non-international armed conflicts, where a national government may lose legitimacy and does not have control of protected areas, the suitability of co-management should be reviewed carefully. This is not just a funding problem: there is much bigger political complexity for statutory donors to be aware of. As stated above, wildlife rangers may be caught up institutionally in the security sector in conflicts where actors on all sides are accused of committing crimes against humanity. Protecting biodiversity during armed conflict requires sustained commitments to conflict-sensitive engagement.

Analysis of conflict events in and near KBAs

While most of the literature on the environmental impacts of international or non-international armed conflict focuses on the effects of conflict activities, as noted above, human displacement and civilian coping strategies can be an indirect driver of biodiversity loss in protected areas. In order to better understand the potential impacts of conflict hostilities versus conflict displacement on KBAs, this section analyzes the locations of KBAs and conflict events together with data on the location of activities of the Office of the UN High Commissioner for Refugees (UNHCR) and forcibly displaced peoples utilizing four data sets for 2022:

1. Uppsala Conflict Data Program (UCDP) Georeferenced Event Dataset (GED) on armed conflict events (https://ucdp.uu.se/downloads/) – selecting only location data that was related to an exact location (671 sites).

37 World Bank, *Collaborative Management Partnership Toolkit*, 2021.

2. UNHCR refugee and IDP locations (https://data.unhcr.org/en/geoservices/) – UNHCR People of Concern data, selecting "refugee" and "IDP".
3. UNHCR field offices and field unit locations (https://data.unhcr.org/en/geoservices/) – UNHCR Presence data, selecting only "field office" and "field unit".
4. KBA locations (www.keybiodiversityareas.org).

Each of the first three data sets is geolocated with a latitude and longitude coordinate reference as a point location. The UCDP's definition of an armed conflict event is "[a]n incident where armed force was used by an organised actor against another organized actor, or against civilians, resulting in at least 1 direct death at a specific location and a specific date".[38] UNHCR provides locations of various aspects of its interventions, and we selected the locations of field offices and field units as a measure of an intervention over which it has some control. The UNHCR People of Concern database records several groups, and we selected only refugee and IDP locations. Only events and locations in 2022 were used in the analysis. The KBA data consist of mapped polygon shapefiles stored in the WDKBA.[39] This analysis is important in understanding the actual threats to KBAs in terms of temporality – during conflict as opposed to post-conflict – both inside and outside KBAs. This information is important for guiding implementation of protected zones effectively.

We first analyzed how many KBAs were directly affected by conflict by calculating the numbers of points in each data set that were found within existing identified KBAs. As we found that the majority of points were located outside KBAs, we then analyzed the distance of each point from the nearest KBA, plotting distance from KBA against the number of events in 1 km intervals up to 20 km. The distance in kilometres of the points in each data set to the nearest KBA boundary was calculated using ArcGIS Pro. An additional randomly allocated 2,000 points were also generated for the land surface of the Earth to compare with the patterns of distribution of the three data sets, and the distance of these points to the nearest KBA calculated likewise.

Presence of armed conflict events, UNHCR locations and their impacts within KBAs

The data consisted of 1,402 armed conflict events (of which 671 were relatively precisely located), 12,847 refugee/IDP camps and 317 UNHCR offices/field units (see Figure 1). Of the 671 armed conflict events with relatively precise locations, a total of thirty-two were recorded within a KBA. Of these, sixteen were in the

38 See "Uppsala Conflict Data Program (UCDP)", *Demscore*, available at: www.demscore.se/partners/ucdpviews/.

39 BirdLife International, *World Database of Key Biodiversity Areas*, developed by the KBA Partnership: BirdLife International, IUCN, Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership Fund, Global Environment Facility, Re:wild, NatureServe, Rainforest Trust, Royal Society for the Protection of Birds, Wildlife Conservation Society and World Wildlife Fund, 2023, available at: www.keybiodiversityareas.org/.

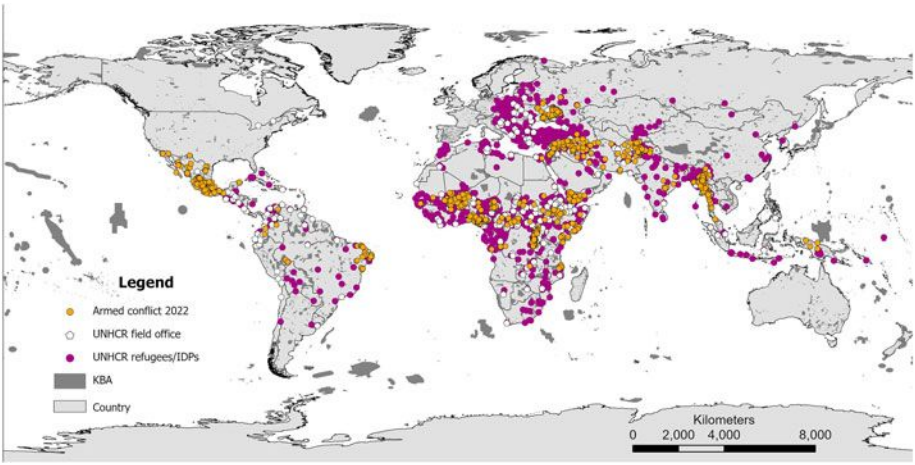

Figure 1. Locations of armed conflict and UNHCR sites in relation to KBAs across the world.

DRC, followed by seven in Mexico (Table 1). Many more refugee and IDP locations exist according to the UNHCR data set, totalling 1,598 within KBAs; Lebanon had the majority of these, with 1,036, followed by 150 in Niger, ninety-five in Chad and seventy in Myanmar. Notably, UNHCR has also established field offices and field units directly within twenty-two KBAs in seventeen countries (see Table 1).

Table 1. *Locations of armed conflict events, refugee/IDP camp locations and UNHCR field stations within KBAs by country*

Country	Number of armed conflict events in KBAs	Number of Refugee/IDP locations in KBAs	Number of UNHCR field offices/units in KBAs
Afghanistan	1		
Albania		3	1
Angola		1	1
Armenia		2	
Bangladesh		5	
Belize		2	
Bolivia		2	
Brazil	1	2	
Bulgaria		1	

Burkina Faso		4	
Burundi		1	
Cameroon		6	
Central African Republic	1	3	
Chad		95	
Colombia		2	
Congo		3	
DRC	16	7	1
Croatia		1	
Eritrea		2	
Ethiopia	1	13	1
Gambia		4	
Georgia		6	
Ghana		4	
Greece		6	1
Guatemala			2
Hungary		1	
Indonesia		2	
Iran			1
Iraq		3	
Israel		1	
Jordan		1	
Lebanon		1,036	1
Libya		2	
Mali	2	5	1
Mexico	7		
Montenegro		1	
Morocco		1	
Mozambique		1	
Myanmar		70	1

Continued

Table 1.
Continued

Country	Number of armed conflict events in KBAs	Number of Refugee/IDP locations in KBAs	Number of UNHCR field offices/units in KBAs
Niger	1	150	
Nigeria		24	
North Macedonia		2	1
Pakistan		1	
Papua New Guinea		4	
Peru			1
Poland		5	
Rwanda		1	
Senegal		1	
Serbia		1	
Slovenia		1	
South Africa		2	
South Sudan		22	2
Sudan	1	5	
Syria	1	1	2
Thailand		3	
Turkey		11	2
Uganda		3	1
Yemen		61	2
Zimbabwe		1	
Total	**32**	**1,598**	**22**

Proximity of armed conflicts and their impacts on KBAs

Armed conflict events

The median distance of the 2,000 random points from a KBA was 134.5 km, excluding points that are located within a KBA. The median distance of armed

conflict events was 29.8 km, indicating that **conflict events are located significantly closer to KBAs than points allocated at random**.

Plots of the distance of sites at 1 km intervals from the KBA boundary (including zero distances for points within KBAs) up to 20 km show that a large number of conflict events occur within 2 km of a KBA (see Figure 2a). Comparison of the pattern expected if using randomly placed points shows that a significantly higher number of sites would be expected to be located within KBAs because of the large global surface area of KBAs (about 9.5% of land). However, the expected distribution of points in the proximity of KBAs (within 20 km) would be consistently around 5% (see Figure 2d). Where the percentage of such locations exceeds 5%, there is a higher than expected incidence of armed conflict as shown in Figure 2a. While armed conflict events do decrease with distance from KBAs, the pattern fluctuates widely. The UCDP georeferenced data set is generated from news reports from the field and is often based on place names or towns; as such, the accuracy of the locations will be lower than the UNHCR data sets and the patterns less reliable, which was why we also analyzed the patterns of displaced peoples and field camps.

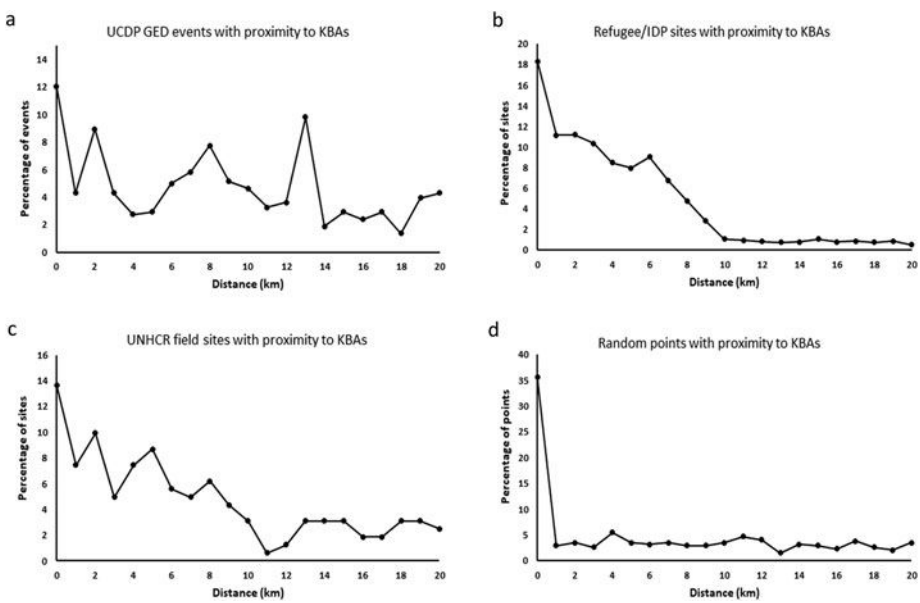

Figure 2. Percentage of the number of (a) armed conflict events, (b) refugee/IDP sites, (c) UNHCR field sites and (d) randomly placed points with proximity to KBAs (km).

Refugee/IDP camps and UNHCR offices

The median distance of UNHCR refugee and IDP camps from KBAs was only 6.9 km, while the median distance for UNHCR field offices was 21.9 km. When

compared with the average distance from random points, this indicates that **UNHCR offices and refugee/IDP camps are located significantly closer to KBAs than points allocated at random.** For both the refugee/IDP data and the field camps/offices there is a clear pattern in their location as regards proximity to KBAs (see Figure 2b and 2c). What we find for the three conflict data sets is that there is a tendency for increased locations in the proximity of KBAs. This is particularly notable for refugee/IDP locations up to 10 km (Figure 2b) and UNHCR field sites (Figure 2c).

These findings clearly show that the impacts of armed conflict, particularly the settlement of refugees and IDPs, are biased towards the boundaries of KBAs, thereby increasing the risk of negative impacts to these globally significant sites for biodiversity.

Georeferenced data on the location of armed conflicts and of refugee settlements/IDP camps is limited, and it is unclear how accurate the points we used are. We deliberately selected the most precise points where points were classified and believe that the patterns we show are real. However, there is a need to collate more accurate data on where conflicts are happening and the precise locations of indirect impacts of those conflicts, such as resource harvesting, pollution and, especially, the displacement of people. Not all KBAs have been identified yet; the KBAs in the WDKBA build on the Important Bird and Biodiversity Area Programme, so many of them have been triggered by the presence of bird species, but countries are being encouraged to make more comprehensive identifications of their KBAs across multiple taxonomic groups and ecosystems, and this will increase the number of KBAs. KBAs are being monitored both on the ground and remotely using remote sensing tools. This will allow conservation and potentially humanitarian actors to measure changes in KBAs, which together with more accurate georeferenced data on conflicts will allow us to assess more accurately the impacts that result from war and the displacement of people.

Case studies of KBAs in places of armed conflict

The following three case studies illustrate the different impacts on biodiversity and protected area management under conditions presented by three different types of armed conflict. They also discuss the different challenges and solutions that were used to protect biodiversity.

Case study: The Greater Virunga Landscape

The Greater Virunga Landscape presents a case study of a transboundary conservation area in Africa governed by a series of legal agreements, at times directly addressing armed conflicts afflicting its territories.[40] The Greater Virunga

40 Elaine C. Hsiao, "Nomoscaping Peace in Times of Conflict: A Case Study of the Greater Virunga Transboundary Collaboration (GVTC)", *IUCN AEL E-Journal*, No. 9, 2018.

Landscape comprises eleven contiguous protected areas, all of which are KBAs[41] and many of which are recognized by other international designations, such as World Heritage Sites, Ramsar sites or biosphere reserves, affirming its environmental and cultural importance. Situated along the breathtaking spine of volcanic ranges and crater lakes of the Central Albertine Rift,[42] the Greater Virunga Landscape is administered by a multi-stakeholder collaboration known as the Greater Virunga Transboundary Collaboration (GVTC) between the DRC, Rwanda and Uganda, as well as international partners. The GVTC's work began with mountain gorilla research and protection and then expanded over the decades to incorporate strategic planning, information-sharing, community development, tourism, peace and security, and more.[43]

Since the early 1980s, the Greater Virunga Landscape has at different times and sometimes simultaneously hosted a range of armed conflicts, including international, non-international and internationalized armed conflicts, with devastating impacts on KBAs. The most significant of these were the Ugandan Civil War in the late 1970s and 1980s, the Rwandan Civil War of 1990–94 (including the genocide against the Tutsis in 1994) and ongoing insecurity in the eastern DRC since 1996, which have collectively displaced millions of people, many of whom were settled in refugee camps in or near protected areas and were prevented from establishing secure, sustainable livelihoods due to intermittent raiding or recurring conflict displacement.[44]

These various forms of insecurity increase the vulnerability (and possibly desperation) of displaced peoples, along with their dependence on natural resources, many of which are situated in KBAs or other protected areas.[45] The eastern DRC is home to over 4 million displaced people; 300,000 were internally displaced around the southern boundaries of Virunga National Park in February 2023 alone.[46] This led to overharvesting of forests for firewood, spurring a multi-million-dollar charcoal trade alongside other exploitive natural resource economies such as mining, oil and fish; these economies are controlled by cartels composed of the region's most pernicious non-State armed groups, which frequently recruit out of settlement camps and occupy portions of protected

41 S. Ayebare *et al.*, *Identifying Climate-Resilient Corridors for Conservation in the Albertine Rift*, unpublished report to MacArthur Foundation, Wildlife Conservation Society, 2013.

42 Andrew Plumptre *et al.*, *The Biodiversity of the Albertine Rift*, Albertine Rift Technical Report No. 3, Wildlife Conservation Society, 2003; Anton Seimon and Andrew Plumptre, "Albertine Rift, Africa", in Jodi A. Hilty, Charles C. Chester and Molly S. Cross (eds), *Climate and Conservation: Landscape and Seascape Science, Planning and Action*, Island Press, Washington, DC, 2012.

43 GVTC, "Transboundary Collaboration in the Greater Virunga Landscape Protected Area Network: Transboundary Strategic Plan 2013–2018", March 2014; GVTC, *Greater Virunga Landscape: Annual Conservation Status Report 2015*, Kigali, March 2017; GVTC Secretariat, "Coordinated Patrols, the Right Ancestor of Greater Virunga Transboundary Collaboration", 9 March 2023, available at: https://greatervirunga.org/coordinated-Patrols-the-right-ancestor-of-greater-virunga-transboundary-collaboration/.

44 Kenneth Omeje and Tricia Redeker Hepner (eds), *Conflict and Peacebuilding in the African Great Lakes Region*, Indiana University Press, Bloomington, IN, 2013.

45 Juichi Yamagiwa, "Bushmeat Poaching and the Conservation Crisis in Kahuzi-Biega National Park, Democratic Republic of the Congo", *Journal of Sustainable Forestry*, Vol. 16, No. 3–4, 2008.

46 UNHCR, *Operational Update: Democratic Republic of the Congo, February 2023*, February 2023.

areas. Such groups include the Democratic Forces for the Liberation of Rwanda, the March 23 Movement and the Mai-Mai militias. Historically, settlement of displaced peoples around protected areas has resulted in environmental degradation and downsizing of national parks.[47] Notably, Virunga National Park has been listed as a World Heritage Site in Danger since 1994 because of the negative impacts of armed conflicts – especially due to the displacement of human populations.[48]

Park rangers between the three countries have worked together to deal with the impacts of war mentioned above, and others. On the ground, this cooperation has included coordinated patrols and mountain gorilla surveys, arrest and handover of cross-border poachers, information-sharing and sustained communications. As testament to these efforts, the mountain gorilla population is the only ape sub-species to improve in conservation status from critically endangered to endangered.[49] In 2003, Plumptre published a study based on a staff survey of the Wildlife Conservation Society after civil wars in the DRC and Rwanda, to draw lessons on how to support conservation in armed crises, as it was evident that the places where field staff remained "fared significantly better".[50] Laying the groundwork for protected zones, local conservationists managed to secure safeguards from both the government and Rwanda Patriotic Front forces to not harm the park or mountain gorillas; a similar arrangement has been forged with other armed groups occupying the parks (e.g., gorilla protection in areas controlled by the National Congress for the Defence of the People).[51] Officially, Article 44 of the DRC's Law No. 14/003 on Nature Conservation provides that "[a]ny protected area enjoys, in times of peace as well as in times of armed conflict, the necessary status of neutrality and special protection against any act likely to violate its integrity and compromise the basic principles of conservation".[52] The law also provides in Article 42 that personnel assigned to the surveillance of protected areas are "non-political and enjoy, in times of peace or armed conflict, a non-belligerent status".[53] On the ground, this neutrality has had to be reinforced through informal negotiations, including with non-State armed groups occupying the parks, and park rangers continue to be at risk.

While critically important for biodiversity, maintaining conservation activities and a presence during armed conflicts comes at great cost to individuals and families. In Plumptre's study, he recounts targeted attacks of field staff leading to the loss of 25% of the Rwandan rangers, 50% of the DRC rangers and

47 Samuel Kanyamibwa, "Impact of War on Conservation: Rwandan Environment and Wildlife in Agony", *Biodiversity and Conservation*, Vol. 7, No. 11, 1998.

48 UN Educational, Scientific and Cultural Organization (UNESCO), *World Heritage Committee: Eighteenth Session*, UN Doc. WHC-94/CONF.003/16, 31 January 1995.

49 IUCN, "Mountain Gorilla", *IUCN Red List*, 2023.

50 Andrew J. Plumptre, "Lessons Learned from On-the-Ground Conservation in Rwanda and the Democratic Republic of the Congo", *Journal of Sustainable Forestry*, Vol. 16, No. 3–4, 2003, p. 71.

51 *Ibid.*, p. 70; "Interview with General Laurent Nkunda", *YouTube*, 3 January 2009, available at: www.youtube.com/watch?v=K9tiu-1ig58.

52 DRC, Law No. 14/003 on Conservation of Nature, 11 February 2014, Art. 44.

53 *Ibid.*, Art. 42.

50% of the Karisoke Research Centre's rangers, in addition to nearly all of them being robbed at gunpoint (94%) and losing family members (88%).[54] Nevertheless, Plumptre states that "field staff continued working because they felt that they were protecting an important part of their natural heritage, and they believed their work was important for their country".[55] Tragically, the Greater Virunga Landscape provides an example of the negative impacts of armed conflict on protected area defenders or park rangers. Virunga National Park, which is currently the only park publicly tracking the direct loss of lives of its rangers, reports that over 200 have been killed since 1925.[56]

There are numerous lessons that can be extracted from the complex and intersecting conflicts of the past and present in the Greater Virunga Landscape, but a few are worth highlighting for the purposes of this article. First is the undeniably interconnected nature of the various armed groups and the different armed conflicts they are a part of, and the KBAs. Second is the armed groups' disregard for the boundaries of the protected areas and the individuals who protect them. Third is the large-scale human displacement and suffering that these armed occupations cause, which then magnify human dependence on natural resources for survival and could be a push factor for IDP/refugee recruitment into armed groups. Together, these issues emphasize the exigency of States operating in tandem, as they have done under the GVTC. However, such efforts are often largely driven by conservation needs, with little experience of intervening in armed conflicts or in conflict transformation, and this sometimes results in actions that are not entirely conflict-sensitive (i.e., that fail to "do no harm").[57] Also, due to lack of expertise, conservationists often rely on State armed forces for security, which would impede any potentially desired demilitarization of protected zones.[58]

Additionally, what this case study highlights is that in order to protect biodiversity, it is essential to protect conservation actors and displaced populations. The threats to biodiversity and safety of park rangers or other conservation actors during these times require greater support through direct physical protection, as well as sustained resources and communications.[59] Displaced peoples also need to be supported through humanitarian assistance, but provided at sufficient distance from protected areas and KBAs to avoid negative ecological impacts and resort to park resources, and to prevent levels of suffering that incentivize non-State armed group recruitment. Since humanitarian assistance is typically provided where displaced peoples cluster and further displacement can be drawn to such locations, this may require assisted

54 A. J. Plumptre, above note 50, p. 80.
55 *Ibid.*, p. 70.
56 Virunga National Park, "Virunga's Rangers: Guardians of Biodiversity", 2023, available at: https://origins.virunga.org/about/rangers/.
57 Elaine Hsiao and Philippe Le Billon, "Connecting Peaces: TBCAs and the Integration of International, Social, and Ecological Peace", *International Journal on World Peace*, Vol. 37, No. 4, 2021.
58 E. C. Hsiao, above note 13.
59 A. J. Plumptre, above note 50.

transportation of displaced peoples to more appropriate locations. What the three points in the previous paragraph also highlight is the difficulty of designating protected zones effectively in such complex, large-scale transboundary landscapes. While the whole of the Greater Virunga Landscape is a singular ecosystem, designating the entire territory as demilitarized would currently be impossible – there are too many armed groups operating within its bounds. While the more *ad hoc* site-specific approach to protected zones could be applied, and in effect has been at times for endangered species protection or humanitarian relief, this would be a temporary band-aid of inconsequential impact toward enhancing the protection of the wider ecosystem. Strengthening collaboration between conservation, humanitarian actors and local authorities may prove to be more effective, especially towards strategic planning and joint operations that can prevent environmental harms while safeguarding human security and promoting favourable protection outcomes.

Case study: South Sudan

The South Sudan case study concerns the management of designated biodiversity sites during the civil war. The partners responsible were an international NGO, Fauna and Flora International (FFI), which provided financial and technical support, with one international staff member on the ground through the civil war;[60] the Ministry of Wildlife Conservation and Tourism; the South Sudan Wildlife Service; and community rangers recruited from local villages close to the protected areas. Strong local relationships had been established over a period of two years prior to the start of the civil war, and this was the only conservation programme that survived in South Sudan throughout this period.

The geographic focus is the southwestern area of South Sudan, bordering the DRC and Central African Republic – a remote, peripheral area on the borders of three conflict-affected countries. The designated wildlife protected areas are the western sector of Southern National Park (the largest in the country at 22,000 km^2 and a designated KBA) and two game reserves located in the Nile watershed, a dense forested zone connecting the biomes of east and central Africa. One of these game reserves is a KBA while the other is not. This is noteworthy since it reflects the sometimes limited knowledge about protected areas in conflict-affected countries. Recent surveys[61] have shown that the game reserve which was not designated as a KBA has the greater biodiversity of the two. Due to decades of armed conflict, the conservation sector was underdeveloped, meaning these protected areas had never been managed in a way recognizable today as wildlife conservation. Biodiversity baselines came from

60 This case study is based on empirical data from the authors' participant/observer research.

61 Surveys using remote-sensing cameras, conducted by FFI, Bucknell University and the South Sudan Wildlife Service: see "'Forgotten Forests' of South Sudan: Camera Traps Capture First-Ever Pictures of Forest Elephants, Giant Pangolins in the Country", *Mongabay*, 9 December 2015, available at: https://news.mongabay.com/2015/12/forgotten-forests-of-south-sudan-camera-traps-capture-first-ever-pictures-of-forest-elephants-giant-pangolins-in-the-country/.

studies in the early 1980s.[62] Wildlife numbers were known to have been decimated as a result of two previous civil wars, weapon proliferation and a lack of wildlife management, but the habitat remained largely intact.[63]

The southern region of Sudan that is now the State of South Sudan suffered civil wars in 1955–72 and 1983–2005,[64] and the area of this case study was also greatly affected by the Lord's Resistance Army (LRA) between 2006 and 2010. This case study covers South Sudan's third civil war that began in 2013, the country's first as an independent nation and custodian of its own natural resources. A first peace accord was signed in August 2015 but collapsed when renewed fighting broke out in the capital Juba in July 2016. Although a revitalized peace agreement was signed in September 2018, armed conflicts continued across the country.[65] This case study focuses on the period from the start of this conflict in December 2013 through 2018. This period saw an ethnically politicized, low-tech war fought largely with small arms and light weapons, the burning of villages and crops, widespread use of sexual violence, and the displacement of vast numbers of civilians, with subsequent acute food insecurity amounting to famine.[66] After the initial fighting in Juba, the priority for the main parties to the conflict was to gain control of the oilfields.[67] When this had been achieved, the fighting moved to timber- and mineral-rich areas, including the area of this case study. In spite of the 2018 peace agreement, conflicts continued across the country, largely fought over sub-national issues often involving control of territory and access to resources.[68] Throughout the period of this case study, direct combat operations did not occur inside the protected areas of the case study. Direct military activity (by government and opposition forces alike) occurred in villages near protected areas, which directly affected those areas' management.

Like the previous civil wars, the conflict played out along lines of government-held urban centres and opposition "rebels" fighting from the bush.[69] This had a major impact on access to and control of protected areas, as

62 See e.g. Luigi Boitani, *The Southern National: A Master Plan*, Institute of Zoology, Faculty of Sciences of the University of Rome, 1981; Jesse C. Hillman, *Ecological Survey and Management Recommendations for Bangangai Game Reserve, South West Sudan, with Special Reference to the Bongo Antelope*, New York Zoological Society, March 1983.

63 UN Development Programme, "Launching Protected Area Network Management and Building Capacity in Post-Conflict Southern Sudan", 2010.

64 Douglas H. Johnson, *South Sudan: A New History for a New Nation*, Ohio University Press, Athens, OH, 2016.

65 Intergovernmental Authority on Development, *Revitalised Agreement on the Resolution of the Conflict in the Republic of South Sudan (R-ARCSS)*, 12 September 2018.

66 Commission on Human Rights in South Sudan, *"There is Nothing Left for Us": Starvation as a Method of Warfare in South Sudan*, UN Doc. A/HRC/45/CRP.3, 5 October 2020.

67 This is based on numerous UN Mission Daily Situation Reports on the conflict at that time, and interviews with expat security staff working in the oil sector. At independence, an estimated 94% of South Sudan's revenue came from oil; the oilfields existed in the most politically contended areas.

68 See, for example, David K. Deng, *Land Governance and the Conflict in South Sudan*, London School of Economics and Political Science, Conflict Research Programme, October 2021.

69 Interview with Gerard Prunier in Vincent Hugeaux, "Comprendre la guerre suicidaire au Soudan du Sud", *L'Express*, 8 January 2014.

"government" Wildlife Service rangers were attacked and pushed out of the rural areas by a growing local insurgency, but kinship and loyalties overlapped and remained fluid. The term "going to the bush" became a euphemism for joining the rebels. Wildlife management became fundamentally a matter of the governance of biodiversity habitat in non-neutral territory. This had serious implications for protected area managers, both international and national staff, and the perceptions of protected area management in a highly securitized environment. In this context, the first critical decision was whether FFI should remain despite the war. This decision was aided by the development of a long-term strategy (fifty-plus years) that ensured the programme could look beyond immediate difficulties and position itself for a future beyond the civil war.

In terms of protected area management, emphasis was placed on activities on the ground – i.e., that success should be measured where the biodiversity existed, especially as the central government had lost control of rural areas and therefore biodiversity protection could only be achieved locally, rather than through the efforts of a government that controlled little outside the capital city.[70] Immediately after the war began and recognizing the emerging fault lines, Community Wildlife Ambassadors (CWAs, or community rangers) were recruited through the local chiefs from indigenous communities nearest the protected areas. The CWAs were trained alongside the Wildlife Service rangers and the two groups subsequently conducted management jointly, providing cooperation and collaboration across the urban/rural (government/opposition) fault line. Taking active measures to be transparent was vital because a community defence group known as the Arrow Boys had formed in this area during the LRA period and was implicated during the emergence of the local armed opposition at this time. As an organized body of mostly youths, the CWAs could have been incorrectly perceived as a threat to the government. At times, when the Wildlife Service had been fought out of its ranger posts by non-State armed groups and confined to towns, the international staff were able to continue working. This indicates that identification of neutrality (in this case, an international staff member known to all sides of the conflict by their NGO vehicle markings) can enable protected area management activities to continue.

The protected areas in this case study are located in designated "opposition" State territory, at a time when protected area designation remains subordinate to State administrative boundaries. Since the Wildlife Service is a government body, rangers are effectively operating in a conflated space, perceived as occupiers and managers of "opposition" territory. Therefore, the Wildlife Service rangers have been taught, and practice, seven fundamental rules underpinning the 1949 Geneva Conventions and their Additional Protocols of 1977 and 2005. These principles have been adapted to wildlife conservation and

70 This decision on programmatic approach was made by the authors with the agreement of FFI staff member Matt Rice.

the handling of persons inside the protected areas, who may be poachers, hunters and/or members of non-State armed groups. The intention is to ensure the fair and non-violent handling of these individuals, many of whom are known to the rangers. This has been a critical factor for ensuring that the practice of protected areas management does not escalate tensions with local non-State armed groups, and avoids the practice of protecting biodiversity from becoming embroiled in the political conflict.

Case study: Ukraine

The ongoing Russia–Ukraine armed conflict has provided insights into the challenge that high-intensity warfare creates for efforts to protect environmentally important areas. Analysis indicates that 43% of Ukraine's designated protected areas were within 20 km of the front line during the first twelve months of the war, while at its peak, around 46% of the country's protected areas were subject to Russian control.[71] Altogether, Ukraine occupies less than 6% of Europe's area, but thanks to its significance for migratory species and geographic diversity, it possesses 35% of Europe's biodiversity – more than 70,000 species, including many that are rare, relict or endemic.[72] It has a relatively well-developed network of terrestrial protected areas, although at around 13% coverage this is well below the European Union average of 26.4%. Generally, Ukraine's protected area management is underdeveloped.[73]

The military characteristics of the war have strongly influenced its impact on protected areas, a number of which have become the focus of fighting. These have included the Chernobyl Exclusion Zone, part of the wider Polesia landscape bordering Belarus in the north, the fragile Kinburn Peninsula and coastal reserves (a KBA) in proximity to the UN Educational, Scientific and Cultural Organization (UNESCO) Black Sea Biosphere Reserve in the south, and the Holy Mountains National Park near Lyman in the east. In each case, human-made and natural features in these areas were perceived as being of strategic or tactical value. This was the case at the former Chernobyl nuclear plant, for Kinburn's proximity to the southern cities of Kherson and Mykolaiv, and for forest cover around an important rail junction in the case of Lyman. Moreover, the status of terrestrial and marine protected areas has received little attention in the public narrative around incidents that have affected these areas, such as that of Snake Island (Zmiinyi Island) in the Black Sea.[74]

While comprehensive data on the impacts on species and habitats is unavailable at the time of writing as the conflict is ongoing, a range of issues have been reported by researchers on the ground. These include damage to woodlands and cratering from the use of explosive weapons, increased rates of landscape

71 CEOBS and Zoï Environment Network, "Ukraine Conflict Environmental Briefing 5: The Coastal and Marine Environment", 2 January 2023.
72 CBD, "Country Profiles: Ukraine", available at: www.cbd.int/countries/profile/?country=ua.
73 CBD Secretariat and UNDP, *Aichi Biodiversity Target 11 Country Dossier: Ukraine*, 2021.
74 CEOBS and Zoï Environment Network, above note 71.

fires at the firing and impact points of heavy weapons, the destruction and looting of protected area buildings, displacement of staff and researchers, and acoustic and chemical pollution in terrestrial and marine habitats.[75]

Although environmentally relevant negotiations took place during the first twelve months of the armed conflict, including over a demilitarized zone around the Zaporizhzhia nuclear plant[76] and the Black Sea Grain Corridor initiative,[77] the speed, scale and intensity of the war have generally precluded discussion between the parties on the protection of nature *per se*. This perhaps suggests greater emphasis on the value of reaching agreement for protected zones prior to the outset of high-intensity international armed conflicts. Nevertheless, the armed conflict has suggested other means through which biodiversity protection could be enhanced in such contexts, even in the absence of protected zone agreements or failures in their implementation.

The first relates to the visibility of harms. A combination of remote monitoring methodologies, the activities of domestic and international civil society, and energetic government advocacy mean that the environmental dimensions of the armed conflict have been comparatively well documented.[78] Coverage has included regular updates from the Ukrainian Ministry of the Environment and the Protection of Natural Resources,[79] domestic and international media interest in the circumstances of Ukrainian conservationists,[80] and collaborative advocacy by scientists aimed at drawing attention to the damage being caused to protected areas, as well as to the wider environmental consequences of domestic governance changes in response to martial law.[81] Visibility for the consequences of the armed conflict on ecologically important areas is an important component of ensuring that harm will be addressed during recovery. This objective will be aided by the development of a more comprehensive digital data set of ecologically important areas,[82] which could be used to help inform recovery processes. including humanitarian mine action.

75 Kateryna Polyanska, "Impact of Military Action on Ukraine's Wild Nature", Ukraine War Environmental Consequences Work Group, 30 January 2023, available at: https://uwecworkgroup.info/impact-of-military-action-on-ukraines-wild-nature/#more-2367.

76 International Atomic Energy Agency, "Update 152 – IAEA Director General Statement on Situation in Ukraine", 30 March 2023, available at: www.iaea.org/newscenter/pressreleases/update-152-iaea-director-general-statement-on-situation-in-ukraine.

77 UN, "Joint Coordination Centre for the Black Sea Grain Initiative", available at: www.un.org/en/black-sea-grain-initiative/background.

78 Doug Weir, "Sustainable Recovery? First Sustain Interest in Ukraine's Environment", CEOBS, 28 July 2022, available at: https://ceobs.org/sustainable-recovery-first-sustain-interest-in-ukraines-environment/.

79 For an archive of the Ministry of Environmental Protection and Natural Resources of Ukraine's weekly updates on environmental issues linked to the armed conflict, see: https://tinyurl.com/yc8juhf7.

80 Antonia Cundy, "Dead Dolphins: How Nature Became Another Casualty of the Ukraine War", *The Guardian*, 6 July 2022.

81 Ukrainian Nature Conservation Group, "About Us", available at: https://uncg.org.ua/en/about-us/; Ukraine War Environmental Consequences Work Group, "About UWEC", available at: https://uwecworkgroup.info/about/.

82 Linas Svolkinas, Oleksiy Vasyliuk and Dmytro Averin, "Mapping Ukraine's Ecologically Important Areas", CEOBS, 18 October 2023, available at: https://ceobs.org/mapping-ukraines-ecologically-important-areas/.

The armed conflict has created considerable challenges for Ukrainian conservationists: in addition to access and security constraints, individual conservationists have joined the armed forces, while conservationist groups have faced the curtailment of projects and programmes and have lost valuable data sets that existed only in written form.[83] Technical and financial support from domestic and international civil society has been extremely valuable, whether from the Ukrainian diaspora or from NGOs, academic institutions or regional intergovernmental organizations with a conservation mandate, such as the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS).[84] Conservation organizations such as the Frankfurt Zoological Society, a historically active partner in projects in Ukraine, have reoriented their activities in response to the armed conflict; this has included arranging the housing of 800 IDPs in park accommodation, implementing new partnerships with organizations working in the most affected regions, and supporting the procurement of supplies necessary for the running of protected areas.[85] Technical and financial support, as well as capacity-building, will continue to be important, but such responses to armed conflicts are typically *ad hoc* and could benefit from standing capacity and expertise informed by an assessment of domestic conservation needs in areas affected by armed conflict.

A third area that should be addressed is the loss of conservation areas due to military activities during armed conflicts. Between 2014 and 2022, protected area authorities in Ukraine lost control of 6% of their protected areas in Crimea and the eastern Donbas region, which represented 12% of the country's total by area, including marine protected areas.[86] Some of these areas have been turned over to military training areas; park facilities have reportedly been looted, and some have suffered more severe landscape fires due to constraints on firefighting response.[87] While some sources claim that some degree of environmental governance is being sustained,[88] the true extent of protected area management is unclear. This emphasizes the challenge of sustaining conservation governance and the integrity of protected areas in the midst of active armed conflict, and thus the value of designating protected zones in ways that allow for the continuation of conservation activities.

83 *Ibid.*
84 ACCOBAMS, "Introduction", available at: https://accobams.org/about/introduction/.
85 Frankfurt Zoological Society, "Support for protected areas in the Carpathians", available at: https://fzs.org/en/support/support-for-protected-areas-in-the-carpathians/.
86 Oleksii Vasyliuk, "Nine Years After Crimea's Annexation: Militarization's Environmental Consequences", Ukraine War Environmental Consequences Work Group, 13 March 2023; CEOBS and Zoï Environment Network, above note 71.
87 Dmitry Simonov, "A Million Wild Orchids and a Bird Sanctuary: What the War Is Doing to the Kinburn Spit", *Ukrainska Pravda*, 15 January 2023, available in Ukrainian at: www.pravda.com.ua/articles/2023/01/15/7383288/.
88 Olga Shashkina, "Exploring Environmental Governance in Eastern Ukraine", CEOBS, 21 May 2020.

Recommendations addressing the establishment of KBAs and protected areas as environmental protected zones

Historical and contemporary debate over the designation of protected zones has tended towards formal designations under the applicable international law. However, as outlined in this article, the conditions and circumstances faced by national and local authorities, communities and conservation organizations across the cycle of conflicts are so diverse as to likely preclude any single formal model. Moreover, in many cases protection is underdeveloped even before the onset of insecurity or conflict. Nevertheless, protection can take many forms. We have identified three areas that stakeholders should focus on to enhance the protection of areas of environmental importance in relation to armed conflicts: (1) protection through visibility, (2) protection through local stakeholders and (3) protection through international stakeholders.

Protection through visibility

While data on the boundaries and values of areas of environmental importance is growing, it should not be viewed as complete. In many cases, targeted work will be needed to better document areas threatened by armed conflict, including occupation; this includes the digitization of physical records that may be at risk of loss. Conservation experts in conflict-affected areas will benefit from international assistance in preparing up-to-date digital maps that help define both formal protected areas and ecologically important areas that would benefit from protection. As much as possible, conservation actors should work with States before conflicts occur to formally recognize KBAs as protected zones and to provide protocols for permissible and non-permissible activities during armed conflict. With a few exceptions for high-profile species, biodiversity protection during conflict remains a low priority and advocacy is foundational to ensuring stakeholder attention on the need to protect areas. One important component of this is ensuring that harm can be monitored during conflicts. In many cases this may involve remotely gathered data, such as on fires or deforestation, yet determining the precise impact on species and habitats typically requires ground surveys that are contingent on the security conditions, making delays in understanding impacts likely. Collaboration with local expertise is important for ground-truthing and contextualizing remote observations.

Further research is needed on the drivers of damage to ecologically important areas in relation to armed conflicts. In this article, we identified a relationship between the location of displacement camps and KBAs; this is a clear example of how increased visibility and data could improve protection. We recommend that humanitarian actors collate geospatial data on the locations of (1) camps and associated infrastructure, (2) local conflict hotspots and (3) where natural resources are being obtained to sustain the camps. These data should be maintained together with protected area and KBA data layers, available for free

from the World Database of Protected Areas and the WDKBA respectively, in order to proactively assess the potential impact of humanitarian operations on biodiversity. While camps may draw in natural resources from far wider geographic areas at times, simple awareness-raising steps such as these could help embed biodiversity considerations at the local level, and within humanitarian organizations.

Once established, refugees and other displaced people tend to move to where relief centres and camps are providing assistance. Ideally the planning of these sites should consider the biodiversity of the region. However, because such sites are often established on plots of land provided by governments or donated by local community members, advocacy may need to be addressed on multiple levels with a range of stakeholders in order to minimize environmental impacts.

Humanitarian actors should also investigate ways in which sensitive data on the locations of their operations can be used to support the monitoring of the impacts of conflicts on protected areas and KBAs in the future. This may be through internal impact assessments or through the development of dedicated partnerships with conservation actors active in these areas and the IUCN, which also provides scientific and technical advice on UNESCO World Heritage Sites in Danger. Environmental staff operating under or in collaboration with humanitarian organizations – for example, environment officers or settlement planners under UNHCR, the UN Environment Programme or the UN Satellite Centre – should be tasked with monitoring these impacts.

We recommend that the wider humanitarian and conservation sectors collaborate and initiate discussions to explore and identify best practice in collating and sharing data. These discussions should consider what is and is not feasible within the security constraints in which these sectors operate, what data is currently collected, and how that data might be used in the future to understand and mitigate the impact of humanitarian activities on environmentally sensitive areas.

Protection through local stakeholders

Enhancing protection is impossible without contextual and situated knowledge. The vast majority of ecologically important areas have long histories of use by local communities, understanding of which is important to address pre-existing stresses and emergent pressures linked to armed conflicts. Community participation is an important component in conservation, particularly in areas where ecological pressures or distrust are high, and especially during times of conflict.[89] Sustainable and effective interventions demand conflict-sensitive approaches, for which there is a growing body of best practice.[90] Local

89 Nabin Baral, "Institutional Resilience of Community-Based Conservation to the Maoist Insurgency in Nepal", doctoral diss., Virginia Polytechnic Institute and State University, 2 November 2009.

90 Nora Moraga-Lewy and Janet Edmond, *Conflict Sensitivity and Environmental Peacebuilding in Conservation: Lessons Learned from Conservation International*, Conservation International, 9 December 2022.

conservation actors may benefit greatly from external technical expertise, particularly as their community roles change in response to the conditions forced on them by war (such as in the South Sudan case). This may be particularly true where conservationists are faced with balancing humanitarian needs resulting from conflict with ecological protection in the areas where they work. Interventions to protect biodiversity during the cycle of armed conflict should maintain the principle of subsidiarity or local and community-led conservation governance as the long-term solution.

There can be a significant blurring of lines between local communities, non-State armed groups, protected area managers and State armed actors. Local communities nearest the protected areas may be linked to political processes, and in many protected areas, non-State armed groups are important actors (as in the South Sudan and Greater Virunga Landscape cases). Guidance on managing relationships between conservation actors and armed actors could be beneficial.[91] Whether during hostilities or under occupation, pre-existing governance and security structures may mean that protected areas cannot be viewed as politically neutral or demilitarized spaces, complicating efforts to present conservation actors as neutral participants. This is problematic as neutrality, or the perception of it, can be highly beneficial for conservation workers.

In these circumstances, "neutral" conservation actors become key arbiters of the conservation activities that can be undertaken. Formal recognition of their neutrality, on their person (such as armbands) and on vehicles and infrastructure, could be beneficial. As noted in the Greater Virunga Landscape case study, Law No. 14/003 provides for the neutrality of protected areas and the non-belligerent status of their personnel, which under Article 43 are identified by their "uniforms with distinctive signs and ranks".[92] However, ranger uniforms alone have not been sufficient to protect park personnel from becoming victims of armed conflicts. Also, if not all KBAs or protected areas are designated as protected zones, there may be a need to further distinguish personnel operating in protected zone KBAs and parks. In terms of activities during armed conflict, the monitoring of biodiversity, the legal maintenance of protected zone boundaries, and capacity development may be some of the more helpful and least antagonizing (i.e., conflict-insensitive) activities. This highlights that biodiversity conservation itself needs to be upheld as the "neutral" entry point, an activity that should be developed during the pre-conflict period. This will be essential for negotiating with all sides of a conflict. Protection activities need to adapt to the dynamics of armed conflict, including the careful return of normal rules and regulations for the management of protected areas, which may involve greater restrictions than during the war itself as much of the protected area downgrading, downsizing and degazettement can occur post-conflict.

91 See e.g. Leo Braack *et al.*, *Security Considerations in the Planning and Management of Transboundary Conservation Areas*, IUCN, 2006.

92 Law No. 14/003, above note 52, Art. 43.

We recommend that the humanitarian sector, States and international conservation bodies cooperate in support of the recognition of conservationists as neutral actors in armed conflict, for example through the use of a recognizable armband and flag. The humanitarian sector can also help identify and inform the development of best practices on managing relationships between conservation actors and armed actors with specific guidelines on permissible types of engagement within protected zones and/or use of arms for conservation purposes (such as protected area law enforcement or providing security for conservation actors).

Protection through international stakeholders

The last decade has seen a significant shift in attitudes towards the importance of environmental protection in relation to armed conflicts. Increased documentation and growing global attention on accelerating biodiversity loss and on the potential role of nature in peacebuilding and post-conflict recovery are also creating the conditions for a reappraisal of how areas of environmental importance can be protected. Change will require a multi-level approach. As with donors in other sectors, the foundations and private donors often associated with funding conservation programmes will need to be persuaded that the potential returns from work in insecure and conflict-affected areas outweigh the perceived risks, a process that can be aided by developing conflict-sensitive programming policies.[93] Given the current failings in financing climate adaptation in such settings, this will likely require dedicated and focused advocacy on the considerable benefits of such work, such as its contribution to environmental peacebuilding. International conservation organizations need to increase their engagement in fragile and conflict-affected areas to ensure that technical and operational knowledge, along with best practice, is collated and shared and can be made available to those who would benefit from it in response to crises. International stakeholders also have an important role to play in drawing attention to the relationship between armed conflict and biodiversity loss.[94] This is particularly important given the reluctance within some multilateral environmental agreements to address what can be viewed as politically contentious security issues. These attitudes reinforce siloed approaches that prevent progress on mainstreaming peace and security considerations in biodiversity instruments, such as the CBD. Mainstreaming should be cross-cutting – for example, also addressing biodiversity loss in security instruments on the proliferation of small arms and light weapons, or in humanitarian mine action.

We recommend that humanitarian organizations, particularly those with UN observer status and signatories to the Climate and Environment Charter for

93 Global Environment Facility, *Evaluation of GEF Support in Fragile and Conflict-Affected Situations*, GEF/E/C.59/01, Independent Evaluation Office, 11 November 2020.

94 Henrike Schulte to Bühne, "Do Mention the War: Why Conservation NGOs Must Speak Out on Biodiversity and Conflicts", *CEOBS Law and Policy*, 11 April 2020, available at: https://ceobs.org/do-mention-the-war-why-conservation-ngos-must-speak-out-on-biodiversity-and-conflicts/.

Humanitarian Organizations, collectively advocate to strengthen global policy and to ensure that the multilateral environment, humanitarian and development agendas are better aligned to safeguard biodiversity and areas of environmental importance.[95] *These organizations could engage with the secretariats of multilateral environmental agreements, outline protected zone protocols for humanitarian actors and support the development of conflict-sensitive rules of engagement for international donors and actors.*

These three priority areas are not exhaustive but if implemented would enhance the identification, profile and protection of ecologically important areas affected by armed conflicts. A final consideration is whether such efforts can be left to happen organically, or whether they would be better catalysed by a formal international instrument or a more informal multi-stakeholder process. In our view, a history of under-prioritization, the accelerating crisis of global biodiversity loss, and the ecological, livelihood and climate benefits that could accrue suggest that progress is too important to leave to chance. The designation of environmental protected zones should not be left to *ad hoc* arrangements once conflict activities are under way, and they need to do more than simply delineate no-go zones that exist only on paper.

95 Climate and Environment Charter for Humanitarian Organizations, 2021, available at: www.climate-charter.org/.

International Review of the Red Cross (2023), **105** (924), 1441–1462.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000280

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Remedying the environmental impacts of war: Challenges and perspectives for full reparation

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Abstract

While the law of State responsibility, particularly the principle of full reparation, provides general guidance for achieving full reparation, it is not quite obvious what kinds of reparation qualify as "full" and how to actualize full reparation. This article centres on the principles, approaches and methods surrounding full reparation for armed conflict-related environmental damage in the law of State responsibility. It examines how the environment is legally defined as an object of protection under international law, and discusses practical challenges in international compensation for wartime environmental damage. In doing so, it ascertains the underlying objective of full reparation, develops an approach to

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assessing wartime environmental damage, and draws on experiences of international jurisprudence to quantify compensation for wartime environmental damage.

Keywords: environmental damage, armed conflict, State responsibility, full reparation, compensation.

Introduction

Multiple subsets of international law safeguard the environment during times of armed conflict, though their adequacy has been contested over the past decades. Relevant protections are proffered by international humanitarian law, international human rights law, international criminal law and international environmental law. Those bodies of primary rules of international law endeavour to prevent, mitigate and remediate harm to the environment at different phases – i.e., before, during and after an armed conflict. Even so, any military operation inevitably causes loss of life, mental and bodily harm, and damage to property and to the environment.[1] Failure to respond to the environmental challenges of war-torn societies can greatly complicate the task of peacebuilding.[2] Recently, the ongoing hostilities in Ukraine have brought the linkages between the environment and conflict to the fore, with the United Nations Environment Programme (UNEP) undertaking a preliminary and rapid review of the damage inflicted on Ukraine's environment, and the potential environmental and public health impacts, in order to inform and prepare for a comprehensive post-conflict assessment.[3]

The responsibility of States for damage caused to the environment in relation to armed conflict is well founded in the law of international responsibility. On the one hand, the responsibility of States for violations of *jus in bello* (law relating to the conduct of the war) is expressly provided for in Hague Convention IV of 1907[4] and Additional Protocol I to the Geneva

1 International Court of Justice (ICJ), *Allegations of Genocide under the Convention on the Prevention and Punishment of the Crime of Genocide (Ukraine v. Russian Federation)*, General List No. 182, Order, 16 March 2022, para. 74.

2 Ken Conca and Jennifer Wallace, "Environment and Peacebuilding in War-Torn Societies: Lessons from the UN Environment Programme's Experience with Post-conflict Assessment", *Global Governance*, Vol. 15, No. 4, 2009, p. 486.

3 UNEP, *The Environmental Impact of the Conflict in Ukraine: A Preliminary Review*, Nairobi, 2022.

4 Hague Convention (IV) Respecting the Laws and Customs of War on Land, 205 CTS 277, 18 October 1907 (entered into force 26 January 1910). Despite the absence of a specific rule addressing the protection of the environment explicitly, Hague Convention IV indirectly protects the environment during armed conflict. Several provisions of the Hague Regulations are considered relevant for the environment through their regulation of the means and methods of warfare – i.e., Article 22 and the Martens Clause contained in the preamble. In addition, the environment is indirectly protected by Article 23(g), which governs the protection of civilian objects and property, and Article 55, which sets forth the rules of usufruct for the

Conventions (AP I).[5] Under Article 3 of Hague Convention IV, "[a] belligerent party which violates the provisions of the said Regulations shall, if the case demands, be liable to pay compensation". Article 91 of AP I contains the same liability rule by providing that "[a] Party to the conflict which violates the provisions of the Conventions or of this Protocol shall, if the case demands, be liable to pay compensation". The international responsibility of States for environmental consequences of armed conflict is affirmed by the International Law Commission (ILC) in the recently adopted Draft Principles on Protection of the Environment in Relation to Armed Conflicts (ILC Draft Principles).[6] On the other hand, a State that has violated *jus ad bellum* (the law relating to the use of force) would be held responsible for all damages, including environmental damage, regardless of whether there is a violation of *jus in bello*.[7] In the meantime, with *jus in bello* continually evolving to enhance the protection of the environment, the gaps in the framework of the law of armed conflict are to be complemented by international environmental law and human rights law.[8] Thus, it follows that any belligerent State that has breached the obligations under the law of armed conflict or any other applicable rules of international law shall be held accountable for all damage it has caused, including environmental damage.

The legal principles applicable to the consequences attached to armed conflict-related environmental harm are also clear. A breach of an international engagement bringing about harm to the environment, regardless of the primary obligations breached, involves "an obligation to make reparation in an adequate form".[9] The responsible State is obliged to "wipe out all the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed".[10] This principle is prescribed in Article 31 of the 2001 ILC Draft Articles on the Responsibility of States for Internationally Wrongful Acts (ARSIWA) as an obligation to "make full reparation" for the damage, whether material or moral, caused by the

Occupying Power. See UNEP, *Protecting the Environment during Armed Conflict: An Inventory and Analysis of International Law*, Nairobi, 2009, pp. 14, 16, 19.

5 Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I).

6 ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries*, UN Doc. A/77/10, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2022 (ILC Draft Principles), Principle 9.

7 Luan Low and David Hodgkinson, "Compensation for Wartime Environmental Damage: Challenges to International Law after the Gulf War", *Virginia Journal of International Law*, Vol. 35, No. 2, 1994, pp. 412–413.

8 See, generally, Anne Dienelt, *Armed Conflicts and the Environment: Complementing the Laws of Armed Conflict with Human Rights Law and International Environmental Law*, Springer Nature, Cham, 2022; Michael Bothe, Carl Bruch, Jordan Diamond and David Jensen, "International Law Protecting the Environment during Armed Conflict: Gaps and Opportunities", *International Review of the Red Cross*, Vol. 92, No. 879, 2010.

9 Permanent Court of International Justice (PCIJ), *Factory at Chorzów*, Jurisdiction, Judgment No. 8, 1927, Series A, No. 9, p. 21.

10 PCIJ, *Factory at Chorzów*, Merits, Claim for Indemnity, Judgment No. 13, 1928, Series A, No. 17, p. 47.

internationally wrongful act of a State.[11] Pursuant to Article 34 of the ARSIWA, the responsible State is obliged to make full reparation for the damage it has caused, which may take the form of restitution, compensation and/or satisfaction.[12] In a word, the obligation to provide "full reparation" requires the elimination of the consequences of a wrongful act as far as possible by re-establishing the situation that would have existed had the act not been committed.

While the law of State responsibility, particularly the principle of full reparation, provides general guidance for addressing reparation for armed conflict-related environmental harm, the unsettled question is how to define the specifics of such a general obligation. What are the specific requirements for the re-establishment? Does it call for restoring each and every component of the damaged environment to its pre-existing physical condition? How can we ascertain whether the adverse effects have been eliminated and the situation has been restored to the state that would have existed had the wrongdoing not been committed? In essence, what kind of reparation, and how much reparation, qualifies as "full", and how should full reparation be realized? This issue is further complicated by the impossibility of active restoration in many situations, most notably in the context of a changing environment suffering from the triple crisis of climate change, pollution and loss of biodiversity.

This article centres on the principles, approaches and methods surrounding full reparation for armed conflict-related environmental damage in the law of State responsibility. Initially, it ascertains the underlying objective of reparation by looking into the definition of the environment as an object of protection under international law. Next, it looks to develop an assessment approach in light of the continuous and cumulative nature of wartime environmental damage. Finally, it draws on international practice in awarding compensation with a view to quantifying compensation for wartime environmental damage. Note that, instead of expounding upon the specific primary rules that provide legal obligations for environmental protection in relation to armed conflict, which have been covered in great detail by various scholars, the focus of this article is on the secondary rules – that is, the law of State responsibility determining legal consequences when a State has breached a primary obligation on environmental protection in wartime situations.

The underlying objective of full reparation

The specific content of the general obligation of full reparation is refined by the aspects of the environment that are protected by law. This section of the paper examines the definition of the environment under international law for the

11 ILC, *Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries*, UN Doc. A/56/10, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2001 (ARSIWA), Art. 31. See also UNGA Res. 56/83, 12 December 2001, Annex.

12 ARSIWA, above note 11, Art. 34. See also James Crawford, *State Responsibility: The General Part*, Cambridge University Press, Oxford, 2013, p. 511.

purpose of identifying the proper objective of reparation for armed conflict-related environmental damage.

The environment as an object of protection

The meaning and scope of the "environment" has not been uniformly defined in international law. Sources of a legal definition of the environment can be found in international agreements, international jurisprudence and the views of highly respected jurists of public international law, such as the ILC.[13] In the following analysis, only treaties that explicitly and directly regulate the protection of the environment during armed conflict are introduced.

Under the international humanitarian law regime, the sources of law on the definitions of direct relevance to the protection of the environment in relation to armed conflict are limited to three major treaties: the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD Convention), Articles I and II;[14] AP I; and the Rome Statute of the International Criminal Court (Rome Statute).[15] AP I (Articles 35(3) and 55) and the Rome Statute (Article 8(2)(b)(iv)) use the term "natural environment", but neither includes a definition of this term. Prohibiting the use of the environment as a "weapon", or more accurately, as a "method" of warfare,[16] the ENMOD Convention provides significantly wider protection for the environment by requiring a much lower threshold of damage than that required by AP I.[17] However, the range of techniques covered by the ENMOD Convention appears to be restrictive,[18] and it does not address the scope of the environment as a target – i.e., the range of targets protected from "destruction, damage or injury".[19] None of the widely ratified *in bello* treaties defines the environment, and provisions on the natural environment in those treaties are framed mostly in anthropocentric terms[20] or only by reference to the term

13 Statute of the International Court of Justice, 59 Stat 1055, 33 UNTS 993, 26 June 1945 (entered into force 24 October 1945), Art. 38. See also Cymie R. Payne, "Defining the Environment: Environmental Integrity", in Carsten Stahn, Jens Iverson and Jennifer S. Easterday (eds), *Environmental Protection and Transitions from Conflict to Peace*, Oxford University Press, Oxford, 2017, p. 45.

14 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, 1108 UNTS 151, 10 December 1976 (entered into force 5 October 1978) (ENMOD Convention).

15 Rome Statute of the International Criminal Court, UN Doc. A/CONF.183/9, 17 July 1998 (entered into force 1 July 2002) (Rome Statute).

16 Karen Hulme and Doug Weir, "Environmental Protection in Armed Conflict", in Malgosia Fitzmaurice *et al.* (eds), *Research Handbook on International Environmental Law*, Edward Elgar, Cheltenham, 2021, p. 401.

17 *Ibid.*, p. 402; see also UNEP, above note 4, p. 12; A. Dienelt, above note 8, pp. 60–61.

18 Yoram Dinstein, "Protection of the Environment in International Armed Conflict", *Max Planck Yearbook of United Nations Law*, Vol. 5, 2001, pp. 526–530; Karen Hulme, *War Torn Environment: Interpreting the Legal Threshold*, Martinus Nijhoff, Leiden, 2004, pp. 72–73; Julian Wyatt, "Law-Making at the Intersection of International Environmental, Humanitarian and Criminal Law: The Issue of Damage to the Environment in International Armed Conflict", *International Review of the Red Cross*, Vol. 92, No. 879, 2010, pp. 619–620.

19 C. R. Payne, above note 13, p. 53.

20 See A. Dienelt, above note 8, pp. 44–58; K. Hulme, above note 18, p. 111.

"natural environment". However, an examination of the law of armed conflict does not reveal the exact meaning and scope of this term – that is, what exactly is protected as the "natural environment".[21]

In addition to the limited protection offered by international humanitarian law, rules of international environmental law show much potential in safeguarding the environment against wartime damage. Certain environmental treaties remain applicable in times of armed conflict;[22] more generally, environmental treaties or multilateral agreements can complement and strengthen environmental protection when an armed conflict occurs.[23] Although the definitions of "environment" differ in various environmental treaties and depend on the subject matter of each treaty, a close look at the provisions of the environmental treaties indicates that environmental protection can extend to the intrinsic value of natural ecosystems.[24] For example, under the United Nations (UN) Convention on the Law of the Non-Navigational Uses of International Watercourses,[25] the term "environment" is intended to encompass the living resources of international watercourses, the flora and fauna dependent upon those watercourses, and the amenities connected with them.[26]

The work of the ILC denotes an acknowledgment of a broader concept of the environment. Typically, the 2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities prescribes a broad definition of the environment that "includes natural resources, both abiotic and biotic, such as air, water, soil, fauna and flora and the interaction between the same factors, and the characteristic aspects of the landscape".[27] According to the ILC, "[e]nvironment could be defined in different ways for different purposes and it is appropriate to bear in mind that there is no universally accepted definition".[28] Further, the Commission has opted to include in the definition "environmental values" and "non-service values" such as the enjoyment of nature and recreational attributes and opportunities.[29]

21 A. Dienelt, above note 8, pp. 282–287.

22 Peacetime treaties may continue in operation during armed conflict, including treaties protecting the environment. For the effects of armed conflicts on treaties, see ILC, *Report of the International Law Commission on the Work of Its Sixty-Third Session*, UN Doc. A /66/10, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2011, pp. 106–130.

23 See, generally, A. Dienelt, above note 8; Britta Sjöstedt, *The Role of Multilateral Environmental Agreements: A Reconciliatory Approach to Environmental Protection in Armed Conflict*, Hart, Oxford, 2020.

24 Alan Boyle, "Reparation for Environmental Damage in International Law: Some Preliminary Problems", in Michael Bowman and Alan Boyle (eds), *Environmental Damage in International and Comparative Law: Problems of Definition and Valuation*, Oxford University Press, Oxford, 2002, p. 20.

25 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, 36 ILM 700, 21 May 1997 (entered into force 17 August 2014).

26 ILC, *Report of the International Law Commission on the Work of Its Forty-Sixth Session*, UN Doc. A/49/10/ 1994, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 1994, para. 6 of the commentary to Art. 21.

27 ILC, *Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities, with Commentaries*, UN Doc. A/61/10, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2006, Principle 2(b).

28 *Ibid.*, para. 19 of the commentary to Principle 2.

29 *Ibid.*, para. 20 of the commentary to Principle 2.

The recent practice of international courts and tribunals is also encouraging in broadening the scope of the environment and allowing reparations for pure environmental damage, namely damage caused to the environment, in and of itself. In its Advisory Opinion in the *Nuclear Weapons* case, the International Court of Justice (ICJ) eloquently noted that "the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn".[30] Later, in the proceedings of the United Nations Compensation Commission (UNCC), despite not attempting to define the term "direct environmental damage" in UN Security Council Resolution 687, the Panel of Commissioners, in regard to environmental claims, accepted claims for a non-exhaustive list of losses or expenses in relation to environmental damage.[31] The Panel explicitly stated that "there is no justification for the contention that general international law precludes compensation for pure environmental damage".[32] In the *Iron Rhine* case decided by the Permanent Court of Arbitration, "environment" was broadly referred to as "including air, water, land, flora and fauna, natural ecosystems and sites, human health and safety, and climate".[33] In the *Certain Activities* and *Armed Activities* cases, the ICJ held that damage to the environment, in and of itself, is compensable under international law.[34]

As seen above, the traditional concern for the environment in the law on armed conflicts is framed largely in anthropocentric terms. Yet this narrow focus on immediate human needs may compromise the resilience of natural systems that supply essential environmental goods and services.[35] In light of this, we will now consider how the rules and practices for environmental protection in relation to armed conflict have developed in tandem with the growth of the broadened definition of the environment in international law.

A dynamic approach to environmental protection

It is worth noting that the ILC takes a dynamic approach to the understanding of environmental considerations in relation to armed conflict. It underlines that "environmental considerations cannot remain static over time but should develop as understanding of the environment develops".[36] The evolving concept of the

30 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996* (Nuclear Weapons Advisory Opinion), para. 29.

31 UNSC Res. 687, 3 April 1991, para. 35. Created in 1991, the UNCC is mandated with processing reparation claims related to Iraq's 1990–91 invasion of Kuwait.

32 UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning the Fifth Instalment of "F4" Claims*, UN Doc. S/AC.26/2005/10, 30 June 2005, para. 58.

33 Permanent Court of Arbitration, *Award in the Arbitration regarding the Iron Rhine ("Ijzeren Rijn") Railway between the Kingdom of Belgium and the Kingdom of the Netherlands*, 24 May 2005, UNRIAA 27, para. 58.

34 ICJ, *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*, Compensation, Judgment, *ICJ Reports 2018*, para. 41; ICJ, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Reparations, Judgment, 9 February 2022, para. 348.

35 C. R. Payne, above note 13, pp. 62–63.

36 ILC Draft Principles, above note 6, para. 7 of the commentary to Principle 14.

environment informs the notion of environmental considerations that should be taken into account in armed conflict. This dynamic approach is also instrumental in actualizing full reparation for environmental damage in the aftermath of an armed conflict.

On the one hand, a contemporary understanding of the environment conceives it as a dynamic system, rather than simply a collection of objects to be protected.[37] The interactivity of the environment should be recognized in assessing wartime environmental damage. In its comments on the ILC Draft Principles, the International Committee of the Red Cross (ICRC) stated: "What is certain is that in assessing the degree to which damage meets the threshold, current knowledge, including on the connectedness and interrelationships of different parts of the natural environment as well as on the effects of the harm caused, must be considered."[38] On this basis, the ILC stressed that current scientific knowledge of ecological processes must be taken into account when applying the "widespread, long-term and severe" damage criteria against which the environment should be protected. To be more specific, "risk of damage should not be conceptualized only in terms of harm to a specific object but should also take into account the possibility of affecting a fragile interdependent system of both living and non-living components".[39]

On the other hand, the broadened notion of the environment reflects a growing realization of the intrinsic link between human and natural systems. The distinction between the natural and man-made parts of the environment appears to be less apparent in current times.[40] As a result, the modern definitions of the environment as an object of protection do not draw a strict dividing line between the environment and human activities but encourage definitions that include components of both.[41] The interactions between human and natural systems have been studied as coupled human and natural systems, which are defined as integrated systems in which people interact with natural components.[42] Based on the complex human–nature relationship, Payne calls for a consideration of how human activities and the environment function as an interactive system. Suggestions include defining liability and causation in terms that account for interactions within the system and considering the systemic effects of remedies provided.[43]

37 C. R. Payne, above note 13, p. 62.

38 ILC, *Protection of the Environment in Relation to Armed Conflicts: Comments and Observations Received from Governments, International Organizations and Others*, UN Doc. A/CN.4/749, 17 January 2022, p. 174.

39 ILC Draft Principles, above note 6, para. 9 of the commentary to Principle 13.

40 Karen Hulme, "Natural Environment", in Elizabeth Wilmshurst and Susan Breau (eds), *Perspectives on the ICRC Study on Customary International Humanitarian Law*, Cambridge University Press, Cambridge, 2007, p. 208.

41 ILC Draft Principles, above note 6, para. 8 of the commentary to Principle 12. See also Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law*, 4th ed., Cambridge University Press, Cambridge, 2018, p. 14: "The concept of the environment, however, encompasses 'both the features and the products of the natural world and those of human civilization'."

42 Jianguo Liu *et al.*, "Complexity of Coupled Human and Natural System", *Science*, Vol. 317, No. 5844, 2007, p. 1513.

43 C. R. Payne, above note 13, p. 69.

Adjusting the objective

In order to integrate the contemporary understanding of the environment, the goal of full reparation and its requirement of "re-establishing the situation that would have existed had the act not been committed" need to be specified in their application to wartime environmental damage. Despite being sparse, judicial practice concerning reparations for environmental harm can provide important insights.

It is noteworthy that re-establishing the prior situation does not simply imply restoring each and every component of the damaged environment to its pre-existing physical condition. In *Certain Activities*, Nicaragua removed approximately 9,500 cubic metres of soil from the sites in question, which were subsequently filled up and covered with vegetation. Under the fifth head of damage, Costa Rica claimed for the cost of replacement soil since the refilled sediment was of a poorer quality and was more susceptible to erosion. The Court determined that Costa Rica had not demonstrated that the difference in soil quality had an effect on erosion control, and thus that the evidence before the Court regarding the quality of the two types of soil was not sufficient to determine any loss which Costa Rica may have suffered.[44] Based on this, the Court rejected Costa Rica's claim for replacement soil.[45] Observably, here the determinative criterion for awarding the payment for restoration was not the fact that the soil that Nicaragua had removed was of a higher quality than the soil that has since replaced it. In order for the Court to identify and assess any loss that Costa Rica may have suffered, the evidence must have been sufficient to demonstrate how and to what extent the difference in quality between the two types of soil, if any, had affected erosion control. In other words, the purpose of re-establishing the pre-existing situation in this scenario is not to replace the soil with something of identical or comparable quality, but to retain the erosion control service offered by the site.

Not coincidentally, while relying on the general principles of State responsibility for guidance, particularly the principle that reparation must, as far as possible, wipe out all the consequences of the illegal act, the UNCC prioritized ecological functioning in determining the appropriate objective of remediation measures and reviewing the details of proposed remediation action.[46] The Panel of Commissioners considered that, in assessing what measures are reasonably necessary to clean or restore a damaged environment, "primary emphasis must be placed on restoring the environment to preinvasion conditions, in terms of its *overall ecological functioning* rather than on the removal of specific contaminants

44 ICJ, *Certain Activities*, above note 34, para. 74.
45 *Ibid.*, para. 87.
46 Philippe Gautier, "Environmental Damage and the United Nations Claims Commission: New Directions for Future International Environmental Cases?", in Tafsir Malick Ndiaye and Rüdiger Wolfrum (eds), *Law of the Sea, Environmental Law and Settlement of Disputes: Liber Amicorum Judge Thomas A. Mensah*, Martinus Nijhoff, Leiden, 2007, p. 207.

or restoration of the environment to a particular physical condition".[47] Even if sufficient baseline information were available, the Panel reasoned, it might not be feasible or reasonable to fully recreate pre-existing physical conditions.[48] The Panel further explained that "in some circumstances, measures to recreate pre-existing physical conditions might not produce environmental benefits and could, indeed, pose unacceptable risks of ecological harm", and as a result, "where proposed measures for the complete removal of contaminants are likely to result in more negative than positive environmental effects, such measures should not qualify as reasonable measures to clean and restore the environment".[49] The UNCC's environmental decisions focused on the protection and restoration of environmental integrity and were based on the principles of precaution, common concern, obligations to future generations, and the value of ecosystems, in addition to long-standing principles of international law.[50]

The practice of the ICJ and the UNCC has demonstrated a nuanced but critical distinction between the objectives of "returning the environment to its original state" and "maintaining the overall ecological functioning of the environment". Recalling that the proper objective of reparation for wartime environmental damage should take account of the contemporary understanding of the environment, the interactivity within the environment, and the coupling of human and natural systems, the principle of full reparation can be achieved through the objective of restoring the overall ecological functioning of the damaged environment.

Approach to assessing wartime environmental damage

As a general rule, in order to determine what reparation should be made for environmental damage, the existence and extent of such damage must be substantiated and the causal nexus between the unlawful act and the damage alleged must be established.[51] However, ascertaining the existence and assessing the extent of environmental damage in the context of armed conflict is fraught with difficulties. This section discusses issues surrounding the identification and assessment of armed conflict-related environmental damage, which include the

47 UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning the Third Instalment of "F4" Claims*, UN Doc. S/AC.26/2003/31, 18 December 2013, para. 48 (emphasis added).

48 *Ibid.*

49 UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning Part One of the Fourth Instalment of "F4" Claims*, UN Doc. S/AC.26/2004/16, 9 December 2004, para. 50; UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning Part Two of the Fourth Instalment of "F4" Claims*, UN Doc. S/AC.26/2004/17, 9 December 2004, para. 41.

50 Cymie R. Payne, "Legal Liability for Environmental Damage: The United Nations Compensation Commission and the 1990–1991 Gulf War", in Carl Bruch, Carroll Muffett and Sandra Nichols (eds), *Governance, Natural Resources, and Post-Conflict Peacebuilding*, Earthscan, Abingdon, 2016, p. 736.

51 ICJ, *Ahmadou Sadio Diallo (Republic of Guinea v. Democratic Republic of the Congo)*, Compensation, Judgment, *ICJ Reports 2012* (I), para. 14; ICJ, *Certain Activities*, above note 34, para. 72; ICJ, *Armed Activities*, above note 34, para. 145.

temporal scale for reparation, limited baseline information, and establishment of the causal nexus.

The temporal scale for reparation

The question of temporal scale for reparation arises from the continuous and cumulative nature of wartime environmental damage. In her *Preliminary Report on the Protection of the Environment in Relation to Armed Conflicts*, Special Rapporteur Marie G. Jacobsson observed that the effect on the environment of an armed conflict may remain long after the conflict and has the potential to prevent an effective rebuilding of the society, to destroy pristine areas or to disrupt important ecosystems.[52] The ICRC also drew attention to the fact that damage to the environment due to armed conflicts may have long-term consequences that continue after the end of hostilities.[53] As an illustration, in Kuwait and Saudi Arabia, the adverse effects of the oil well fires during the 1990–91 Gulf War were revealed more than ten years later in the form of desert covered with inches of oily residue that eventually hardened into a pavement-like substance, and lakes of oil that trapped livestock, birds and other wildlife.[54] Another prominent illustration is the "zone rouge", an exclusion area of France where World War I had a long-lasting impact on the environment; being completely destroyed by the Battle of Verdun, it is still deemed unfit for human habitation more than a century after the end of the hostilities. On the one hand, these examples shed an additional perspective on the importance of both the principle of precautions from the law of armed conflict[55] and the precautionary approach from international environmental law.[56] On the other, the long-term environmental impact of armed conflicts may take many years to unveil itself, and it will be far too late to wait until then to make reparation. Therefore, the appropriate remedy for such situations necessitates provisions for keeping reparations open-ended where the full extent or long-term impacts of environmental damage may not be immediately apparent, with an

52 Marie G. Jacobsson, *Preliminary Report on the Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/674, 2014, p. 208; see also ILC, *Report of the International Law Commission on the Work of Its Sixty-Third Session*, UN Doc. A/66/10, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2011, Annex E, "Protection of the Environment in Relation to Armed Conflicts", p. 351.

53 ICRC, *Strengthening Legal Protection for Victims of Armed Conflicts*, Geneva, 2011, p. 18.

54 Cymie R. Payne, "Environmental Claims in Context: Overview of the Institution", in Cymie R. Payne and Peter H. Sand (eds), *Gulf War Reparations and the UN Compensation Commission: Environmental Liability*, Oxford University Press, Oxford, 2011, p. 6.

55 Rule 44 of the ICRC Customary Law Study provides: "Methods and means of warfare must be employed with due regard to the protection and preservation of the natural environment. In the conduct of military operations, all feasible precautions must be taken to avoid, and in any event to minimize, incidental damage to the environment. Lack of scientific certainty as to the effects on the environment of certain military operations does not absolve a party to the conflict from taking such precautions." Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), Rule 44, available at: https://ihl-databases.icrc.org/en/customary-ihl/rules. See also ILC Draft Principles, above note 6, Principle 14 and para. 8 of the commentary.

56 P. Sands and J. Peel, above note 41, pp. 229–240.

option to revisit the remediation process and implement additional measures if long-term effects emerge over time or are discovered.

An effective way to identify and assess long-term risks to the environment in relation to armed conflict so as to inform necessary future actions is to monitor the consequences during conflict and in its aftermath.[57] In this regard, the ICRC suggests establishing possible mechanisms and procedures for addressing the immediate and long-term consequences of environmental damage.[58] One of the unique features of the work of the UNCC is the implementation of comprehensive monitoring and assessment projects to ascertain the level of damage. As expressed by the Panel of Commissioners, even if the results generated show that no damage has been caused or that damage has occurred but remediation or restoration efforts are not possible or advisable in the circumstances, a monitoring and assessment activity could be of benefit. Also, such an activity could help to alleviate concerns regarding potential risks or damage and avoid unnecessary and wasteful measures to deal with non-existent or negligible risks.[59]

The UNCC Governing Council decided that "appropriate priority should be given to the processing of [the monitoring and assessment] claims" related to the Iraqi invasion of Kuwait.[60] Such claims were grouped into the first instalment of environmental claims to be reviewed by the Panel of Commissioners, separately from the resolution of the related claims for environmental damage. But the monitoring and assessment programmes did not start until June 2001, ten years after Iraq's invasion and occupation of Kuwait. By this time claims had already been submitted for the third, fourth and fifth instalments. Accordingly, the Panel received and considered post-submission amendments when results from monitoring and assessment projects became available, changing the extent and nature of the damage and increasing the costs of proposed remediation substantially in some cases, while reducing it in others.[61]

Limited baseline information

Addressing immediate and long-term consequences of environmental damage from armed conflicts raises novel questions about reparation.[62] Reliable information on the condition of the environment is hard to obtain due to mass destruction – to be specific, armed conflicts will lead to disruptions in environmental monitoring,

57 Peter H. Sand, "Compensation for Environmental Damage from the 1991 Gulf War", *Environmental Policy and Law*, Vol. 35, No. 6, 2005, p. 246.

58 ICRC, above note 53, p. 18.

59 UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning the First Instalment of "F4" Claims*, UN Doc. S/AC.26/2001/16, 22 June 2001, para. 32.

60 *Ibid.*, para. 17.

61 UNCC, above note 47, para. 32. See also Larraine Wilde, "Scientific and Technical Advice: The Perspective of Iraq's Experts", in C. R. Payne and P. H. Sand (eds), above note 54, p. 97; Peter H. Sand, "Environmental Principles Applied", in C. R. Payne and P. H. Sand (eds), above note 54, p. 179.

62 Carsten Stahn, Jens Iverson and Jennifer S. Easterday, "Protection of the Environment and Jus Post Bellum: Some Preliminary Reflections", in C. Stahn, J. Iverson and J. S. Easterday (eds), above note 13, p. 5.

data collection and information-sharing.[63] In many instances, monitoring facilities and equipment are destroyed and ongoing tensions hamper data collection by rendering areas inaccessible.[64] The complexity of the ecological processes adds to the difficulties in evidence-gathering, insomuch as the assessment of environmental impact often requires a lengthy and expensive process of discovery of damage undertaken by experts.[65] To illustrate this, in the proceedings of the UNCC, a majority of the environmental claims were rejected not due to inadmissibility but for insufficient evidence,[66] such as being inadequate in establishing baseline levels, in determining the proportion of damage attributable to Iraq's invasion and occupation of Kuwait or assessing the importance of other factors, in quantifying such damage, etc.

In situations of armed conflict, making reparation is complicated by a lack of baseline information for comparison between pre- and post-war conditions. The absence of accurate baseline data precludes the determination of the precise origin and extent of the environmental consequences of armed conflicts. In this connection, the UNCC Panel of Commissioners stated that baseline information on the state of the environment prior to the Iraq conflict may be inadequate, which makes it difficult in many cases to distinguish between damage attributable to the conflict and damage that may be due either to unrelated factors or only partly attributable to the conflict.[67] As an example, the Panel decided that Syria did not provide sufficient evidence to demonstrate damage to its groundwater resources from pollutants resulting from the oil well fires in Kuwait because "the scarcity of pre-invasion data makes it difficult to assess the full significance of the post-invasion data".[68]

On the one hand, though baseline data is vital for the precise characterization of pre-invasion conditions, the inadequacy of documented baseline information does not necessarily rule out reparation. On one occasion, the UNCC Panel of Commissioners developed an estimate of the amount of damage to or depletion of rangelands, taking account of the limited baseline information about the conditions of the rangeland areas prior to Iraq's invasion and occupation.[69] On the other hand, baseline conditions can be established by reference to publicly available data and external resources. In its response to the Gulf War reparation claims, Iraq's advisory team used data from several studies undertaken in the countries concerned by reputable universities and technical institutes as well as the work of foreign consultants which provided valuable information for establishing baseline oil pollution levels.[70] Also, in the *Certain*

63 K. Conca and J. Wallace, above note 2, p. 493.
64 *Ibid*.
65 The difficulties encountered in the *Trail Smelter* and *Gabčíkovo-Nagymaros Project* cases are illustrative of this. See Hanqin Xue, *Transboundary Damage in International Law*, Cambridge University Press, Cambridge, 2003, pp. 179–182.
66 P. Gautier, above note 46, p. 209.
67 UNCC, above note 59, para. 34.
68 UNCC, *Part One of the Fourth Instalment*, above note 49, paras 333–336.
69 UNCC, above note 32, para. 178.
70 L. Wilde, above note 61, p. 103.

Activities case, the ICJ awarded compensation for environmental damage without clear evidence on reliable baseline data being presented.[71] Suggestions have been put forward to seek assistance from scientific experts who are able to palliate the unavailability or insufficiency of data on baseline conditions by using data from reference sites or by means of simulation models.[72]

Establishment of the causal nexus

Establishment of the causal nexus is another challenge facing the assessment of wartime environmental claims. The law of State responsibility requires establishing a link of causality between a culpable act and the damage suffered. The causal link must be "sufficiently direct and certain", and the damage must be neither too remote nor too speculative.[73] Realistically, environmental harm may be detected far away from the place where the action was committed, and such physical distance will cast doubt on the causal link between the injury suffered and the wrongful act.[74] In particular, damage to the environment due to armed conflicts may be extensive, spreading far beyond the actual combat zone.[75] In addition, environmental harm is the result of cumulative effects, but providing evidence of causation is often hindered by the multiple and often indirect links between violent conflict and environmental degradation; this problem can be further compounded by the aforementioned absence of baseline data about pre-conflict conditions.[76]

Given that the causation between environmental damage and wrongful acts during the conflict is not always clear and straightforward, a strict interpretation of the rules on evidence places a heavy burden on the claimant, particularly with respect to damages resulting from concurrent causes.[77] In this regard, the solution for attaining full reparation is to develop specific causality standards applicable to wartime environmental damage.

As set out by the UNCC, in the case of Iraq's invasion and occupation of Kuwait, regard must be paid to the contribution of any pre-existing or subsequent causes where such causes can be identified, "not in determining the restoration objective to be achieved by remediation, but in determining the proportion of the costs of remediation that can reasonably be attributed to [the invasion]".[78] The Panel of Commissioners made it plain that Iraq is not exonerated from liability for loss or damage simply because other factors might

71 ICJ, *Certain Activities*, above note 34, para. 76. See also *ibid.*, Declaration of Judge Gevorgian, para. 6.
72 Kévine Kindji and Michael Faure, "Assessing Reparation of Environmental Damage by the ICJ: A Lost Opportunity?", *Questions of International Law*, Vol. 57, 2019, p. 14.
73 ICJ, *Diallo*, above note 51, paras 14, 49.
74 Alexandre Kiss and Dinah Shelton, *Guide to International Environmental Law*, Martinus Nijhoff, Leiden, 2007, p. 20.
75 ICRC, above note 53, p. 18.
76 C. R. Payne, above note 50, p. 734. See also, A. Kiss and D. Shelton, above note 74, p. 263: "separating out the causation has been a difficult matter, particularly in the absence of baseline information".
77 P. Gautier, above note 46, p. 209.
78 UNCC, above note 47, para. 47.

have contributed to the loss or damage. Evidence present in relation to each head of loss or damage is the basis for ascertaining the existence of a direct causal nexus.[79]

In a similar vein, the ICJ elaborated later in the *Armed Activities* case that the question of causation raises certain difficulties in the situation of a long-standing and large-scale armed conflict, as the causal nexus between the internationally wrongful act and the alleged injury may be "insufficiently direct and certain to call for reparation".[80] It may be the case that damage is attributable to several concurrent causes, including the acts or omissions of the responsible State; or that several internationally wrongful acts of the same nature, but attributable to different actors, may result in a single injury or several distinct injuries. The Court had to consider these questions as they arose, in light of the facts of the case and the evidence available.[81] The Court then made a distinction between the actions and omissions that took place in the area that was under the occupation and effective control of Uganda and those that occurred in other areas not necessarily under Uganda's effective control. As regards the latter, the Court took account of the fact that some of the damage occurred as a result of a combination of actions and omissions attributable to other States and to rebel groups. Nevertheless, the fact that the damage was the result of concurrent causes was not sufficient to exempt Uganda from any obligation to make reparation.[82]

In specifying the legal test for causation, the ICJ highlighted that "the causal nexus required may vary depending on the primary rule violated and the nature and extent of the injury".[83] It appears difficult to draw definite conclusions about how the standard of proof regarding the causal nexus correlates with the primary rule violated and the nature and extent of the injury, yet it is undeniable that the existence of concurrent causes does not exempt the responsible actor from the obligation to make reparation for wartime environmental damage. In cases where the causal link is insufficiently direct and certain, the extent of injury attributable to the responsible actor can be assessed in light of the specific factual circumstances and the evidence produced. At the very least, in a situation of occupation, consideration must be given to whether the actor exercised effective control over the territory where the damage occurred.

In addition, the ICJ recognized that pursuant to the rules of attribution, in certain situations a single actor may be required to make full reparation for the damage while in other situations the responsibility should be apportioned among multiple actors.[84] This is consistent with the position taken by the UNCC, which held that due account of the contribution from other factors should be taken in order to determine what proportion of the damage is attributable to the

79 UNCC, *Report and Recommendations Made by the Panel of Commissioners Concerning the Second Instalment of "F4" Claims*, UN Doc. S/AC.26/2002/26, 3 October 2002, para. 25.
80 ICJ, *Armed Activities*, above note 34, para. 94.
81 *Ibid.*
82 *Ibid.*, paras 95–97.
83 ICJ, *Armed Activities*, above note 34, para. 93.
84 *Ibid.*, para. 98.

responsible actor.[85] In other words, the level of compensation paid by each actor should be proportionate to the amount of damage contributed by that actor. Note that divergence occurred when evidence did not reflect the proportion of each contribution. The ICJ took into account available evidence in arriving at a global sum awarded for all damage,[86] while the UNCC was of the view that when the proportion of Iraq's participation in the damage could not be accurately proven, it recommended no compensation.[87]

Compensation and valuation of wartime environmental damage

In environmental adjudication, compensation is a common form of remedy as it seeks to replace the loss sustained.[88] However, a calculation of monetary compensation for pure environmental harm makes the standard of full reparation extremely difficult, if not impossible, to realize. This section clarifies the complexity of quantifying wartime environmental damage and explores how relevant rules can be informed by jurisprudence of international compensation.

Valuation of environmental damage

Valuing environmental losses is a challenging exercise because, on the one hand, restitution is often impossible to achieve, and on the other, the valuation of environmental damage requires special techniques.[89] Notwithstanding its primacy as a form of reparation, restitution is frequently unavailable or inadequate in relation to environmental damage due in large part to the irreversible nature of such damage.[90] In the *Gabčíkovo-Nagymaros Project* case, the ICJ noted "the often irreversible character of damage to the environment" and "the limitations inherent in the very mechanism of reparation of this type of damage".[91] This is particularly evident in the context of armed conflict. It is often the case that armed conflict causes massive and widespread environmental harm, and restitution is often costly and sometimes impossible in the case of irreversible harm. For general reparations, the ARSIWA describes compensation as "perhaps the most commonly sought in international practice",[92] while it is also preferred by claimants for environmental harm due to sovereignty concerns. In addition, despite having a non-economic value requiring restoration to the state prior to

85 UNCC, *Part One of the Fourth Instalment*, above note 49, para. 40.
86 ICJ, *Armed Activities*, above note 34, paras 221, 253.
87 UNCC, *Part One of the Fourth Instalment*, above note 49, para. 40.
88 UNEP, *Environmental Rule of Law: First Global Report*, Nairobi, 2019, p. 217.
89 Marja Lehto, *Second Report on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/728, 27 March 2019, para. 134; Cymie R. Payne, "Developments in the Law of Environmental Reparations: A Case Study of the UN Compensation Commission", in C. Stahn, J. Iverson and J. S. Easterday (eds), above note 13, p. 353.
90 ARSIWA, above note 11, para. 3 of the commentary to Art. 36.
91 ICJ, *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, *ICJ Reports 1997*, para. 140.
92 ARSIWA, above note 11, para. 2 of the commentary to Art. 36.

the damage occurring, pure environmental damage may be incapable of being calculated in market terms. As a result, compensation raises the problem of assessing the quantum of environmental damage – i.e., whether it should be based on the costs of reinstatement measures, on an abstract quantification computed using a theoretical model, or on some other basis.[93]

The legal precedents for international environmental compensation are generally limited, indicating that the rules of international law relating to the valuation of environmental damage remain underdeveloped.[94] In addition to the ICJ and the UNCC, a substantial jurisprudence on awarding compensation has been developed in the practices of various international courts, tribunals, institutions and mechanisms, including the International Tribunal for the Law of the Sea, the International Oil Pollution Compensation (IOPC) regime, the Iran–United States Claims Tribunals, the European Court of Human Rights, the Inter-American Court of Human Rights, and the International Centre for Settlement of Investment Disputes tribunals under the Convention on the Settlement of Investment Disputes between States and Nationals of other States.[95] Notwithstanding that significant body of precedents, the questions of assessment and valuation of environmental damage were under-addressed until recently. Moreover, war reparations are usually settled by agreement between the belligerents,[96] and these agreements do not necessarily conform to the standard of full reparation. In consequence, the customary rules on compensation for environmental losses are less settled, whether in the context of armed conflict or in times of peace.

Loss of ecosystem services

The inherent difficulties in quantifying environmental damage lie in the growing focus on the value of ecosystem services. Developed at an early stage of modern environmental science and law, the law of war did not adequately appreciate the extent and type of harm suffered by the environment during armed conflict.[97] With increased emphasis placed on the concept of "ecosystem services" as well as their intrinsic value, there is now general recognition that conflicts often, directly or indirectly, affect human health and livelihoods as well as ecosystem services,[98] and that durable peace cannot be achieved if the natural resources sustaining

93 P. Sands and J. Peel, above note 41, pp. 749–750.

94 By contrast, extensive practice in this area exists at the national and regional levels. See e.g. Edward H. P. Brans, *Liability for Damage to Public Natural Resources: Standing, Damage and Damage Assessment*, Kluwer Law International, The Hague, 2001; Jason Rudall, *Compensation for Environmental Damage under International Law*, Routledge, Oxon, 2020.

95 ARSIWA, above note 11, para. 6 of the commentary to Art. 36.

96 Dinah Shelton, *Remedies in International Human Rights Law*, 3rd ed., Oxford University Press, Oxford, 2015, p. 180.

97 Cymie R. Payne, "Environmental Integrity in Post-Conflict Regimes", in Carsten Stahn, Jennifer S. Easterday and Jens Iverson (eds), *Jus Post Bellum: Mapping the Normative Foundations*, Oxford University Press, Oxford, 2014, p. 503.

98 DAC Network on Environment and Development Cooperation, *Strategic Environment Assessment and Post-Conflict Development*, Organisation for Economic Co-operation and Development, November 2010, p. 4.

livelihoods and ecosystem services are damaged degraded, or destroyed.[99] This view was endorsed by the ICJ in the *Certain Activities* case. The Court stated that "damage to the environment, and the consequent impairment or loss of the ability of the environment to provide goods and services, is compensable under international law", and that "such compensation may include indemnification for the impairment or loss of environmental goods and services in the period prior to recovery and payment for the restoration of the damaged environment".[100] These groundbreaking holdings were reinforced in the *Armed Activities* case.[101]

While efforts to quantify environmental value in financial terms are nearly always imperfect,[102] it is now evident that under international law the valuation of environmental damage should include compensation for losses in ecosystem services so that the injured State can be made whole. Although no generally applicable valuation technique is prescribed or prohibited by international law,[103] international judicial institutions have been attempting to quantify the losses to be compensated for damaged ecosystem services, as the practices of the UNCC and the ICJ suggest. The UNCC Panel of Commissioners recommended compensation for a wide variety of environmental damage, while noting the inherent difficulties in attempting to place a monetary value on damaged natural resources, particularly resources that are not traded in the market.[104] Notably, in several cases concerning the loss of ecological services, the Panel accepted the claimant's use of methods such as habitat equivalency analysis (HEA) and rejected some other methods such as travel costs surveys for the purpose of determining the nature and extent of compensatory remediation.[105] In the *Certain Activities* case, the proffered methods of both parties were deemed relevant but neither was chosen by the Court; instead, a somewhat opaque method referred to as an "overall valuation approach" was adopted.[106] These different approaches to valuation were developed in conformity with the general principles and rules applicable to the determination of compensation, with a view to achieving the goal of full reparation. It should be mentioned that one potential risk involved with addressing reparations only as monetary compensation is the failure to implement environmental recovery measures following the transfer of

99 Ursign Hofmann and Pascal Rapillard, "Post-Conflict Mine Action: Environment and Law", in C. Stahn, J. Iverson and J. S. Easterday (eds), above note 13, p. 397.

100 ICJ, *Certain Activities*, above note 34, para. 42.

101 ICJ, *Armed Activities*, above note 34, para. 348. However, the claim for environmental damage resulting from deforestation was dismissed on the ground that the Democratic Republic of the Congo did not provide any basis for assessing damage to the environment, in particular to biodiversity, through deforestation, and the Court was thus unable to determine the extent of injury, even on an approximate basis. *Ibid.*, para. 350.

102 As economists have emphasized, "[m]any ecosystem services are public goods or the product of common assets that cannot (or should not) be privatized. … Their value in monetary units is an estimate of their benefits to society expressed in units that communicate with a broad audience." Robert Costanza *et al.*, "Changes in the Global Value of Ecosystem Services", *Global Environmental Change*, Vol. 26, 2014, p. 157.

103 UNCC, above note 32, para. 80; ICJ, *Certain Activities*, above note 34, para. 52.

104 UNCC, above note 32, para. 81.

105 P. Sands and J. Peel, above note 41, p. 758.

106 ICJ, *Certain Activities*, above note 34, paras 78–83.

funds. The risk is even higher if economic techniques, rather than the actual cost of remediation and restoration, are used to value ecosystem services.

The valuation approaches employed by both the UNCC and the ICJ seem to offer only limited guidance for assessing wartime environmental damage. For instance, the UNCC Panel's application of HEA in a number of claims demonstrates a valuation procedure for ecosystem services that can be employed in future proceedings to protect and restore ecological services that are not traded in the market;[107] however, it is noted that HEA is used most effectively in oil spill cases, particularly those limited in spatial extent, but long-term environmental harm which spans multiple decades can be very difficult to evaluate using HEA.[108] In its overall valuation in the *Certain Activities* case, the ICJ was keen to adopt an approach that accounted for the correlation between the most significant damage to the area and other harms, the specific characteristics of the area, and the capacity of the damaged area for natural regeneration.[109] These considerations appear to offer a useful starting point in choosing the methods used to quantify wartime environmental damage, but the absence of an explanation as to when such a method (or any other alternatives) can be an effective tool for estimating losses in ecological services or how such a method should be conducted makes it not easily replicable for subsequent environmental cases. Hence, while there is no one-size-fits-all approach to the valuation of environmental damage, it is meaningful to form certain quantitative guidelines for how to compute the losses that are recoverable in order to ensure consistency in choosing the methods of calculating the amount of compensation.

Environment-related damage to public health

As a further complication, the valuation of damages to public health that are the result of armed conflict poses unique challenges. The environment affects the right of living: the fundamental importance of the right to a safe, clean, healthy and sustainable environment has been recognized at the international level,[110] and large-scale environmental damage exerts influence on a huge but uncertain number of populations during and after an armed conflict. Reference can be made to the *Environmental Guidelines* published by the Office of the UN High Commissioner for Refugees (UNHCR), which note that "the state of the environment … will have a direct bearing on the welfare and well-being of people living in that vicinity, whether refugees, returnees or local communities".[111]

Full reparation for wartime environmental damage cannot lose sight of the health and quality of life of the population. Ultimately, the relationship between reparation for the environment and for the well-being of humankind is not

107 C. R. Payne, above note 50, pp. 737–738.
108 William H. Desvousges, Nicholas Gard, Holly J. Michael and Anne D. Chance, "Habitat and Resource Equivalency Analysis: A Critical Assessment", *Ecological Economics*, Vol. 143, 2018, pp. 83–84.
109 ICJ, *Certain Activities*, above note 34, paras 79–82.
110 UNGA Res. 76/300, 28 July 2022.
111 UNHCR, *UNHCR Environmental Guidelines*, Geneva, 2005, p. 5.

incompatible but symbiotic.[112] Underpinning the law of armed conflict, as well as international environmental law and human rights law, the two incentives often go hand in hand.[113] In the UNCC proceedings, several claimant governments submitted substantive compensation claims for public health damage associated with the environmental damage caused by Iraq. The scope of the claims covers, for example, fatalities or increased mortality in the country as a result of exposure to air pollution during the invasion and occupation,[114] costs of medical treatment of an increased number of diseases attributed to exposure to air pollutants,[115] and treatment costs and loss of well-being associated with post-traumatic stress disorder and other psychiatric illnesses.[116] The Panel of Commissioners concluded that public health damage is compensable in principle, and that the test to be applied is whether the expense or loss for which compensation is claimed has actually occurred and can reasonably be demonstrated to be a direct result of Iraq's invasion and occupation of Kuwait.[117] However, in the majority of the health-related cases, the Panel found that the evidence submitted did not provide a sufficient basis for determining the extent to which the effects of the oil well fires might have contributed to the damage, or in other words, whether or what proportion of the damage, if any, can reasonably be attributed to the effects of the oil well fires or to Iraq's invasion and occupation. In the end, less than 0.1% of the amount claimed for substantive public health damages was granted.[118]

The frequent failure of claimant governments to meet evidentiary standards for compensation highlights the necessity of equitable considerations. Referring to the approach adopted in the *Diallo*[119] and *Trail Smelter*[120] cases, the ICJ underlined that "the absence of adequate evidence as to the extent of material damage will not, in all situations, preclude an award of compensation for that damage".[121] Rather,

> [t]he Court may, on an exceptional basis, award compensation in the form of a global sum, within the range of possibilities indicated by the evidence and taking account of equitable considerations. Such an approach may be called for where the evidence leaves no doubt that an internationally wrongful act has caused a substantiated injury, but does not allow a precise evaluation of the extent or scale of such injury.[122]

112 Merryl Lawry-White, "Victims of Environmental Harm during Conflict: The Potential for 'Justice'", in C. Stahn, J. Iverson and J. S. Easterday (eds), above note 13, p. 376.
113 A. Dienelt, above note 8, pp. 260–264.
114 See e.g. UNCC, above note 32, paras 519–522, 710–713.
115 See e.g. *ibid.*, paras 274–277, 687–692.
116 See e.g. *ibid.*, paras 282–285, 503–505, 701–704.
117 *Ibid.*, para. 68.
118 Peter H. Sand and James K. Hammitt, "Public Health Claims", in C. R. Payne and P. H. Sand (eds), above note 54, p. 215.
119 ICJ, *Diallo*, above note 51, paras 21, 24, 33.
120 Permanent Court of Arbitration, *Trail Smelter Case (United States, Canada)*, 16 April 1938 and 11 March 1941, UNRIAA 3, p. 1920.
121 ICJ, *Certain Activities*, above note 34, para. 35.
122 ICJ, *Armed Activities*, above note 34, para. 106.

Given the uncertainties of health-related effects relating to environmental damage in the context of armed conflict, the amounts of compensation can be assessed on an equitable basis which is commensurate with the scale of the relevant damage. In the meantime, special care should be taken to ensure that compensation determined on the basis of equitable considerations excludes the possibility of being "punitive or exemplary".[123]

Concluding observations

The general principles governing the legal consequences of an internationally wrongful act, in particular the principle of full reparation, provide overarching guidance for dealing with reparation for environmental damage. However, little has been said as to how exactly this goal of full reparation for environmental damage can be accomplished, especially with regard to environmental damage in the aftermath of armed conflict.

Taking the evolution of the legal concept of the environment as a starting point, it is unsurprising to see that a contemporary understanding of the environment has become more encompassing. A dynamic approach toward the understanding of environmental protection would be instrumental in providing redress for wartime environmental damage as it respects the interactivity of the environment, on the one hand, and coupled human–nature systems, on the other. A subtle but crucial distinction exists between the objectives of "returning the environment to its original state" and "maintaining the overall ecological functioning of the environment". Restoring the overall ecological functioning of the damaged environment is an underlying objective for the purpose of making full reparation for wartime environmental damage.

Prior to deciding on reparation, the existence and extent of such damage must be substantiated and the causal nexus between the unlawful act and the damage alleged must be established. A temporal approach that considers the continuous and cumulative nature of wartime environmental damage can help to ease the problems in determining the existence and assessing the extent of environmental damage in the context of armed conflict. Long-term effects of environmental damage caused by armed conflict may be identified through constant monitoring and assessment activities.

A major cause of failed environmental claims is lack of sufficient baseline information and evidence of causality to determine the extent of damage attributable to the alleged illegal acts. The unavailability or insufficiency of baseline information does not necessarily rule out reparation, however, as it can be palliated by the use of data from reference sites or by means of simulation models. In light of the difficulties in establishing a link of causality between the wrongful act and the damage suffered, more specific criteria of causation should be developed for environmental damage resulting from armed conflict. The rules

123 ICJ, *Certain Activities*, above note 34, para. 31; *ibid.*, Declaration of Judge Gevorgian, para. 9.

that can be extracted from international jurisprudence include the following: pre-existing or subsequent causes should be taken into account in determining the extent of injury that can be attributed to the wrongful act; the existence of concurrent causes does not relieve the responsible actor from the obligation to make reparation; and in situations of occupation, regard should be paid to whether the actor exercises effective control over the territory where the damage occurs.

Fully restoring the environment to its pre-existing physical conditions in the aftermath of armed conflict is often infeasible or burdensome, and in such cases compensation would be the appropriate form of reparation. Valuation of environmental damage in relation to armed conflict raises a number of practical challenges, however. The monetization of environmental damage requires special techniques, especially for losses of ecosystem services. International law neither prescribes nor prohibits specific valuation techniques, but guidelines or relevant legal instruments on the valuation of environmental damage are needed for the consistency and integration of international protection of the environment. Finally, environmental harm affects the populations concerned, and thus full reparation for wartime environmental damage cannot lose sight of public health damage. Given the frequent failure of claimant governments to meet the standard of proof, such category of damages may be valued on an equitable basis.

These are some preliminary observations that can be made as the protection of the environment in relation to armed conflict continues to evolve. In 2009, UNEP suggested establishing a permanent UN body, either under the General Assembly or under the Security Council, to take charge of evaluating and possibly compensating for environmental damage during armed conflicts.[124] While it still looks premature to have such a body be established, it is never too early to protect our environment, whether in times of armed conflict or in times of peace.

124 UNEP, above note 4, p. 6.

International Review of the Red Cross (2023), **105** (924), 1463–1496.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000255

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Criminalizing reprisals against the natural environment

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Abstract

Throughout history, armed conflicts have frequently seen serious harm committed against the natural environment. From the early 1960s to 1971, the United States used Agent Orange to defoliate large tracts of Vietnamese forests. In the 1990s, Saddam Hussein vengefully ordered the burning of Kuwaiti oil wells, resulting in massive pollution to the air, land and surrounding seas. More recently, ecocentric harm has been documented in the Colombian civil war, by the so-called Islamic State group, and in the Ukraine conflict, among others. Whilst international humanitarian law (IHL) contains several prohibitions against environmental harm, the most striking is Article 55(2) of Additional Protocol I, whereby "[a]ttacks against the

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natural environment by way of reprisals are prohibited". Although this provision appears absolute and unconditional, critical questions persist regarding its status under customary international law and its applicability in non-international armed conflicts. Moreover, its criminalization has not been explored in the jurisprudence of international courts or in the relevant scholarly literature, despite the fact that penal sanctions against individuals are an important factor for enforcement of environmental protections.

To fill the lacuna, the following analysis examines the prohibition and criminalization of reprisals against the natural environment. It reviews conventional and customary international law to determine the current status of a putative criminal prohibition and its potential as lex ferenda. *Importantly, it also assesses the relevance of reprisals against the natural environment for prosecutions under existing war crimes, such as attacks on civilian objects and destruction of enemy property. It generates novel insights for the application of international law to ecocentric harm, including that (1) reprisals against the natural environment are not criminal* per se, *but (2) conceptualizing the environment as a civilian object opens up clear paths for prosecuting attacks, including reprisals, against it; (3) the inherently intentional nature of reprisals has far-reaching implications for their prosecution; (4) reprisals can significantly impact the pivotal test of military necessity which arises in criminal prohibitions such as that found in Article 8(2)(b)(iv) of the Rome Statute; and (5) situations of reprisals could impact the application of the proposed definition of ecocide.*

Traversing IHL and international criminal law (ICL), the article identifies ways in which these traditionally anthropocentric bodies of law can be reoriented to accommodate ecocentric values. This reconceptualization is significant, as the prospect of criminal sanctions is critical for deterring potential perpetrators and potentially adds a basis for reparations designed to remediate damage to the environment. The assessment redresses the fact that the natural environment has been seen as a peripheral matter under both IHL and ICL and has remained under-explored despite the ongoing destruction wrought on nature including during armed conflict. It seeks to elevate the environment to a core protected value under these legal regimes, as a reflection of our increasing awareness that the natural environment is critical for the well-being of current and future generations and our growing appreciation of the intrinsic importance of protecting nature.

Keywords: reprisals, natural environment, International Criminal Court, Rome Statute, Additional Protocol I, ecocide, customary international law.

Introduction

This article examines means of protecting the natural environment[1] under international humanitarian law (IHL) and international criminal law (ICL). It

1 This analysis uses a definition of "natural environment" provided by the International Law Commission (ILC), whereby "'natural environment' should be taken broadly to cover the environment of the human

seeks to enhance the protection of the environment both for its value for human well-being and in its own right.[2] As a silent victim of armed conflict,[3] the natural environment can suffer damage that long outlasts the cessation of hostilities.[4] Recent events in Ukraine have highlighted the direct and indirect risks posed to nature during warfare,[5] particularly with the destruction of the Kakhovka Dam and resulting flooding of tens of thousands of hectares of land.[6] Whereas environmental harm can occur accidentally, history has demonstrated that vindictive leaders will sometimes intentionally order attacks against the environment.[7] The most notorious example of this in recent decades is that of Saddam Hussein's Iraqi forces burning around 600 oil wells in Kuwait during the 1990–91 Gulf War.[8] Other conflicts, from the Second World War,[9] to Vietnam,[10]

race and where the human race develops, as well as areas the preservation of which is of fundamental importance in protecting the environment. These words therefore cover the seas, the atmosphere, climate, forests, and other plant cover, fauna, flora and other biological elements." ILC, *Draft Code of Crimes against the Peace and Security of Mankind*, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 1991, UN Doc. A/CN.4/SER.A/1991/Add.l (Part 2), commentary to Art. 26, p. 107, para. 4. The terms "nature" and "environment" are used interchangeably with "natural environment" throughout this article.

2 The distinction between the facets of the environment which are useful to humans and those that constitute "pure" nature can be significant when it comes to proportionality assessments (as discussed below under the heading "Criminalizing Ecocentric Reprisals: The Key to Enforcement"); acts that harm both humans and nature are likely to be considered graver than acts limited to harming the environment.

3 Jonathan Watts, "The 'Silent Victim': Ukraine Counts War's Cost for Nature", *The Guardian*, 20 February 2023, available at: www.theguardian.com/world/2023/feb/20/ukraine-war-cost-for-nature-russia (all internet references were accessed in May 2023).

4 See, e.g., UNGA Res. 56/4, "Observance of the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict", 13 November 2001. For an overview of historic examples of environmental harm during armed conflict, see Dieter Fleck, "Legal Protection of the Environment: The Double Challenge of Non-International Armed Conflict and Post-Conflict Peacebuilding", in Carsten Stahn, Jens Iverson and Jennifer S. Easterday (eds), *Environmental Protection and Transitions from Conflict to Peace: Clarifying Norms, Principles and Practices*, Oxford University Press, Oxford, 2017.

5 See Zalakeviciute Rasa, Danilo Mejia, Hermel Alvarez, Xavier Bermeo, Santiago Bonilla-Bedoya, Yves Rybarczyk and Brian Lamb, "War Impact on Air Quality in Ukraine", *Sustainability*, Vol. 14, No. 21, 2022, pp. 14–15; United Nations Environment Program, *The Environmental Impact of the Conflict in Ukraine*, 14 October 2022, pp. 29–31; James Kilner, "Massive Blast after Russians Bomb Dam Near Kherson during Retreat", *The Telegraph*, 12 November 2022, available at: www.telegraph.co.uk/world-news/2022/11/12/retreating-russian-forces-destroyed-dam-near-city-kherson/; "Ukraine Dam Hit by Russian Missiles in Zelenskyy's Hometown", *Al Jazeera*, 15 September 2022, available at: www.aljazeera.com/news/2022/9/15/ukraine-dam-hit-by-russian-missiles-in-zelenskyys-hometown.

6 Alex Binley and Paul Adams, "Ukraine Dam: Thousands Flee Floods after Dam Collapse Near Nova Kakhovka", *BBC News*, 7 June 2023, available at: www.bbc.co.uk/news/world-europe-65819591.

7 See Julian Wyatt, "Law-Making at the Intersection of International Environmental, Humanitarian and Criminal Law: The Issue of Damage to the Environment in International Armed Conflict", *International Review of the Red Cross*, Vol. 82, No. 879, 2010, pp. 596–597.

8 Ines Peterson, "The Natural Environment in Times of Armed Conflict: A Concern for International War Crimes Law?", *Leiden Journal of International Law*, Vol. 22, No. 2, 2009, p. 342.

9 See, e.g., International Military Tribunal (IMT), *Hostages Trial*, United Nations War Crimes Commission, *Law Reports of Trials of War Criminals*, Vol. 3, 1949, pp. 66–69.

10 See, e.g., Eliana Cusato, "From Ecocide to Voluntary Remediation Projects: Legal Responses to Environmental Warfare in Vietnam and the Spectre of Colonialism", *Melbourne Journal of International Law*, Vol. 19, No. 2, 2018, p. 494.

to the Colombian civil war,[11] to those involving the so-called Islamic State group,[12] have also seen the environment targeted.[13]

Now the international community faces the spectre of nuclear weapons being used against Ukraine,[14] or a conventional weapon damaging the Zaporizhzhia Nuclear Power Plant.[15] Such incidents would almost inevitably result in severe ecocentric damage – including destruction of natural features, flora and fauna – due to the blast, heat, and fallout of radioactive isotopes (some of which have half-lives decades or centuries long), alongside the grave anthropocentric consequences.[16] Russian spokespersons and supporters have reportedly invoked reprisals to justify attacks against Ukraine on multiple occasions – such as President Putin in response to the Ukrainian attacks on the Crimean Bridge,[17] and President Ramzan Kadyrov of Chechnya in response to drone attacks on Moscow[18] – while also accusing Ukraine of committing reprisals.[19] These threats (as well as similar ones from countries such as North

11 See, e.g., Jurisdicción Especial para la Paz (JEP), Salas de Justicia Sala de Reconocimiento de Verdad, de Responsabilidad y de Determinación de Los Hechos y Conductas, Case No. 5, Auto, Srvr, No. 001 de 2023, 1 February 2023, para. 523. See also Ricardo Pereira *et al.*, *The Environment and Indigenous People in the Context of the Armed Conflict and the Peacebuilding Process in Colombia: Implications for the Special Jurisdiction for Peace and International Criminal Justice*, Capaz Policy Brief 2-2021, 2021, p. 4.

12 See, e.g., Peter Schwartzstein, "The Islamic State's Scorched-Earth Strategy", *Foreign Policy*, 6 April 2016, available at: https://foreignpolicy.com/2016/04/06/the-islamic-states-scorched-earth-strategy/.

13 See, generally, Matthew Gillett, *Prosecuting Environmental Harm before the International Criminal Court*, Cambridge University Press, Cambridge, 2022, Chap. 5.

14 See United Nations, "Risk of Nuclear Weapons Use Higher than at Any Time since Cold War, Disarmament Affairs Chief Warns Security Council", 31 March 2023, available at: https://press.un.org/en/2023/sc15250.doc.htm.

15 Andrian Prokip, "The Kakhovka Dam Disaster: Responsibility and Consequences", *Focus Ukraine*, 14 June 2023, available at: www.wilsoncenter.org/blog-post/kakhovka-dam-disaster-responsibility-and-consequences.

16 See Matthew B. Bolton and Elizabeth Minor, "Addressing the Ongoing Humanitarian and Environmental Consequences of Nuclear Weapons: An Introductory Review", *Global Policy*, Vol. 12, No. 1, 2021, pp. 84, 88; International Court of Justice (ICJ), *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, *ICJ Reports* 1996 (Nuclear Weapons Advisory Opinion), para. 35 ("[N]uclear weapons as they exist today, release[] not only immense quantities of heat and energy, but also powerful and prolonged radiation"). See also Remus Pravalie, "Nuclear Weapons Tests and Environmental Consequences: A Global Perspective", *Ambio*, Vol. 43, No. 6, 2014. Even if some areas subjected to nuclear fallout have eventually experienced regeneration, the recovery of an area impacted by nuclear fallout would likely be slower and more unpredictable than following other forms of ecological disruption: see Arthur H. Westing, "Environmental Impact of Nuclear Warfare", *Environmental Conservation*, Vol. 8, No. 4, 1981.

17 See Zach Schonfield, "Putin Warns of 'Harsh' Reprisal after Bridge Explosion", *The Hill*, 10 October 2022, available at: https://thehill.com/policy/international/3680893-putin-warns-of-harsh-reprisal-after-bridge-explosion/; President of Russia, "Meeting with Permanent Members of the Security Council", 10 October 2022, available at: www.en.kremlin.ru/events/security-council/69568 (referring to "harsh" retaliation for "terrorist" attacks on the Crimean Bridge, and responses "commensurate" with the threats posed). In early August 2023, Dmitry Medvedev reportedly posted a threat online, warning that if Ukraine caused an ecological catastrophe in the Black Sea (by destroying Russian ships) then Russia would cause an ecological disaster in Ukraine, the effects of which would last for centuries.

18 "Kremlin Denies Mooting, Decision-Making on Potential Introduction of Martial Law in Russia", *Tass*, 31 May 2023, available at: https://tass.com/society/1625859.

19 Kremlin, "Presidential Address to Federal Assembly", 21 February 2023, available at: http://en.kremlin.ru/events/president/news/70565; "Kiev Morphed into neo-Nazi Dictatorship after Onset of Martial Law, Russian MFA Says", *Tass*, 19 April 2023, available at: https://tass.com/politics/1606591.

Korea[20]), along with the continuing threat to the environment during armed conflict, emphasize the pressing need for clarity regarding the legal framework governing reprisals and its application to attacks on the natural environment.

IHL is far from silent regarding environmental harm during armed conflict. Additional Protocol I (AP I), in particular, has several provisions that are directly relevant, including Articles 35(3) and 55(1), which have been subject to extensive scholarly attention.[21] Less attention has been directed towards Article 55(2) of AP I, which states that "[a]ttacks against the natural environment by way of reprisals are prohibited".[22] Despite this ostensibly unconditional framing, reprisals against the natural environment raise critical questions, including their customary international law status, their potential criminalization *per se*, and their impact on existing criminal provisions. Those debates build on a contentious history. During the negotiations of AP I, reprisals "proved to be one of the most controversial and intractable of problems".[23] In 2022, when commenting on the prohibitions against reprisals under Articles 51–55 of AP I, renowned IHL scholar Yoram Dinstein stated they are premised on

> an unreasonable expectation that, when struck in contravention of [the law of international armed conflict], the victim would turn the other cheek to the attacker. This sounds more like an exercise in theology than in [the law of international armed conflict].[24]

While Dinstein's reservations reflect the fact that reprisals were historically countenanced as a way to unilaterally force compliance with legal obligations, there has been a discernible shift since the 1990s towards prosecutions under

20 See "North Korea Launches Short-Range Ballistic Missile toward Yellow Sea – Yonhap", *Tass*, 9 March 2023, available at: https://tass.com/defense/1586515 (reporting that North Korea launched short-range ballistic missiles and threatened South Korea and the United States with reprisals if they conduct joint military exercises).

21 See, e.g., Tara Weinstein, "Prosecuting Attacks that Destroy the Environment: Environmental Crimes or Humanitarian Atrocities?", *Georgetown International Environmental Law Review*, Vol. 17, No. 4, 2005, p. 697; Steven Freeland, *Addressing the Intentional Destruction of the Environment during Warfare under the Rome Statute of the International Criminal Court*, Intersentia Series Supranational Criminal Law: Capita Selecta, Vol. 18, 2015; Matthew Gillett, "Eco-Struggles: Using International Criminal Law to Protect the Environment During and After Non-International Armed Conflict", in Carsten Stahn, Jens Iverson and Jennifer S. Easterday (eds), *Environmental Protection and Transitions from Conflict to Peace: Clarifying Norms, Principles and Practices*, Oxford University Press, Oxford, 2017, Chap. 10.

22 Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I). The text of Articles 35(3) and 55(2) was drafted by a Working Group of Committee III of the Diplomatic Conference on Humanitarian Law: see Yves Sandoz, Christophe Swinarski and Bruno Zimmermann (eds), *Commentary on the Additional Protocols*, ICRC, Geneva, 1987 (ICRC Commentary on the APs), p. 613, para. 2130; Stanisław E. Nahlik, "Belligerent Reprisals as Seen in the Light of the Diplomatic Conference on Humanitarian Law, Geneva, 1974–1977", *Law and Contemporary Problems*, Vol. 42, No. 2, 1978, p. 49.

23 Françoise J. Hampson, "Belligerent Reprisals and the 1977 Protocols to the Geneva Conventions of 1949", *International and Comparative Law Quarterly*, Vol. 37, No. 4, 1988, p. 818.

24 Yoram Dinstein, *The Conduct of Hostilities under the Law of International Armed Conflict*, 4th ed., Cambridge University Press, New York, 2022, para. 1059.

international law as the key enforcement mechanism.[25] For environmental protection, there still have not been any convictions under ICL for harming nature.[26] Nonetheless, the shift towards criminal prosecution is significant, and the impetus to prosecute environmental destruction is gaining momentum.[27] However, the possibility of prosecuting reprisals against the natural environment remains under-explored in the literature.[28] Whereas other works have examined the application of ICL to environmental harm,[29] there has been no detailed consideration of criminal liability for reprisals in this respect. This reflects the fact that reprisals were traditionally used as a means to justify violations of IHL rather than being a basis on which to be prosecuted. Significant works on international criminal liability for environmental harm contain no discussion of reprisals,[30] and similarly, the concept of reprisals was overlooked entirely by the Independent Expert Panel in its definition of ecocide.[31]

This article seeks to redress that gap by reconceptualizing whether the IHL prohibition on reprisals against the natural environment could constitute a basis for criminal prosecution under ICL.[32] The discussion first explains this ecocentric reconceptualization as a normative innovation which also has operational implications for the protection of the environment. It then examines the

25 See International Criminal Tribunal for the former Yugoslavia (ICTY), *Prosecutor v. Zoran Kupreškić et al.*, Case No. IT-95–16-T, Judgment (Trial Chamber), 14 January 2000. See also Veronika Bílková, "Belligerent Reprisals in Non-International Armed Conflicts", *International and Comparative Law Quarterly*, Vol. 63, No. 1, 2014, p. 33; Ricardo Pereira, "After the ICC Office of the Prosecutor's 2016 Policy Paper on Case Selection and Prioritisation: Towards an International Crime of Ecocide?", *Criminal Law Forum*, Vol. 31, 2020, p. 186.

26 But see JEP, above note 11, para. 523 (in which environmental destruction is charged as a war crime).

27 See, e.g., ICC Office of the Prosecutor, *Policy Paper on Case Selection and Prioritisation*, 15 September 2016, para. 41 (prioritizing selection of cases that involve harm to the environment); Parliamentary Assembly of the Council of Europe, Recommendation 2246 (2023), 2 February 2022 (calling for the recognition of ecocide as a crime in international and national legislation).

28 See V. Bílková, above note 25, p. 34 ("There is no doubt that belligerent reprisals preclude wrongfulness at the level of the State responsibility …. It is less certain what role they may play in the area of individual criminal responsibility"); Stavros-Evdokimos Pantazopoulos, "Reflections on the Legality of Attacks against the Natural Environment by Way of Reprisals", *Goettingen Journal of International Law*, Vol. 10, No. 1, 2020 (addressing reprisals against the natural environment under IHL but not assessing criminal liability therefor).

29 See above note 21.

30 See, e.g., V. Bílková, above note 25; S.-E. Pantazopoulos, above note 28; Eliana Teresa Cusato, "Beyond Symbolism: Problems and Prospects with Prosecuting Environmental Destruction before the ICC", *Journal of International Criminal Justice*, Vol. 15, No. 3, 2017, p. 491; R. Pereira, above note 25, p. 179; S. Freeland, above note 21; Danuta Palarczyk, "Ecocide Before the International Criminal Court: Simplicity is Better than an Elaborate Embellishment", *Criminal Law Forum*, 2023 (all lacking any assessment of criminal liability for reprisals against the natural environment). The present author's own previous works on prosecuting environmental harm touched on the issue of reprisals without developing the analysis of their criminalization: see M. Gillett, above note 13, pp. 111–112.

31 Independent Expert Panel for the Legal Definition of Ecocide, *Commentary and Core Text*, June 2021, available at: www.stopecocide.earth/legal-definition.

32 Although the focus of this article is situations of armed conflict, environmental harm also occurs during peacetime: see Frédéric Mégret, "The Problem of an International Criminal Law of the Environment", *Columbia Journal of Environmental Law*, Vol. 36, No. 2, 2011, pp. 246–247. However, the analysis in the present paper does not address the prosecution of such acts as crimes against humanity, genocide or aggression, as these provisions import extensive considerations that cannot be covered in the space available.

meaning, history, status and guiding parameters of reprisals, particularly against the environment, as a matter of IHL and customary international law. These are contested issues, subject to contrasting views from States and commentators, but are necessary prefatory matters in order to assess the criminalization of reprisals against the natural environment. The article takes a uniquely bifocal approach, looking both at the legal status of reprisals against the natural environment from a doctrinal perspective and at the factual relevance of reprisals from a litigation strategy perspective. The doctrinal discussion is important given the persistence of contentious questions regarding reprisals, such as their customary status.[33] Equally, the relevance of the factual scenario of reprisals is important for the operationalization of this source of potential environmental protection. Both facets of the discussion are undergirded by a rigorous analysis of IHL and ICL, which allows for the identification of areas of consonance and dissonance between these two international law regimes. At the theoretical level, the purpose is to inculcate ecocentric considerations into the traditionally anthropocentric realms of IHL and ICL.[34] A complementary purpose is to identify ways in which reprisals can be relevant at the operational level of international criminal justice when imposing criminal liability and ordering reparations for environmental harm.

Normative and operational facets of the analysis

The present examination of the ecocentric potential of reprisals entails innovations at both the normative and operational levels of analysis. Normatively, this article reorients debates regarding reprisals towards an ecocentric (also termed "eco-sensitive") perspective, looking at how this doctrine can result in greater protection of the environment and not only of humans and their property.[35] In doing so, it diverges from the traditionally anthropocentric approach to IHL, which created an oppositional dichotomy between human and environmental interests, typically subjugating the latter to the former.[36]

Specifically, it does so by eschewing the conventional understanding of reprisals as a form of unilateral self-help measure that aims to reduce violations

33 See below under the heading "Customary International Law Applicable to Reprisals against the Natural Environment".

34 See S. Freeland, above note 21, pp. 242, 277.

35 This adheres to calls for an "eco-sensitive" approach to international criminal justice: see, e.g., Rachel Killean, "From Ecocide to Eco-Sensitivity: 'Greening' Reparations at the International Criminal Court", *International Journal of Human Rights*, Vol. 25, No. 2, 2020, pp. 325–326.

36 See S.-E. Pantazopoulos, above note 28, p. 50 ("Parts of the environment, the silent victim of warfare, lend themselves to being targeted by way of reprisals, given the traditional anthropocentric approach – in the sense of aiming to alleviate human suffering – that transverses the entire field of IHL"). Although long overlooked by the formulators of IHL (see J. Wyatt, above note 7, p. 607; S. Freeland, above note 21, p. 220), environmental consciousness has started to permeate IHL since the Vietnam War, partly as a reaction to the egregious use of Agent Orange and its impact on the environment during that conflict: see, e.g., ICRC Commentary on the APs, above note 22, p. 661, paras 2124–2125 (noting that at the Diplomatic Conference in 1987, the natural environment had only recently become a matter of concern for the international community).

of IHL by the opposing side.[37] It assesses whether the prohibition of reprisals against the natural environment can provide a basis for criminal prosecution of those harming nature. Although this "greening"[38] of prosecutions involves a novel reconceptualization of the role of reprisals, it does not seek to undermine the core tenets of IHL and ICL.[39] Most importantly, it does not seek to displace the protection offered by these bodies of law against unnecessary suffering and death, in line with the principle of humanity.[40]

Accordingly, the present study proceeds on the presumption that the overarching normative frameworks of these two fields of international law will remain in place,[41] other than the proposed addition of the crime of ecocide, as discussed herein. Alternative conceptual approaches, such as equating the environment with humans and extending to it all human-centred protections,[42] are not pursued herein. Such wholesale approaches would risk dissipating the hard-fought achievement of anthropocentric protections, such as the majority of the crimes enforced before the International Criminal Court (ICC). They would also risk conflating the two separate but overlapping concepts of "humanity" and the "natural environment", which would in turn mystify critical notions required to redress atrocity crimes, such as agency, intentionality and victimhood.[43]

Nonetheless, this article's examination of the criminalization of the IHL prohibition of reprisals against the natural environment is normatively significant, as it demonstrates the extent to which a traditionally anthropocentric doctrine such as reprisals can be reassessed with an ecocentric objective in mind (to maximize its utility for environmental protection). This

37 V. Bílková, above note 25, p. 33.

38 See Florencio J. Yuzon, "Deliberate Environmental Modification through the Use of Chemical and Biological Weapons: 'Greening' the International Laws of Armed Conflict to Establish an Environmentally Protective Regime", *American University Journal of International Law and Policy*, Vol. 11, No. 5, 1996, p. 815.

39 The current analysis does not seek to radically displace existing international law, but instead aims to reconceptualize the provisions of IHL and ICL to accommodate ecocentric considerations alongside anthropocentric ones.

40 See Nuclear Weapons Advisory Opinion, above note 16, para. 95 ("[A]s the Court has already indicated, the principles and rules of law applicable in armed conflict – at the heart of which is the overriding consideration of humanity – make the conduct of armed hostilities subject to a number of strict requirements"); Theodor Meron, "The Humanization of Humanitarian Law", *American Journal of International Law*, Vol. 94, No. 2, 2000, p. 245. But see Yoram Dinstein, "The Principle of Proportionality", in Kjetil Mujezinović Larsen, Camilla Guldahl Cooper and Gro Nystuen (eds), *Searching for a "Principle of Humanity" in International Humanitarian Law*, Cambridge University Press, Cambridge, 2012, pp. 72–73.

41 For an examination of the normative framework of ICL, see William A. Schabas, *An Introduction to the International Criminal Court*, 6th ed., Cambridge University Press, Cambridge, 2020. For an examination of the normative framework of IHL, see Y. Dinstein, above note 24.

42 See Sara de Vido, "A Quest for an Eco-centric Approach to International Law: The COVID-19 Pandemic as Game Changer", *Jus Cogens*, Vol. 3, No. 2, 2021 (calling for the environment to be conceived as "us, including humans, non-human beings, and natural objects").

43 Equating the environment with human persons would provoke questions including whether the environment has agency, whether it can evince intentionality, and whether it can be considered a victim in the same way as a human can.

reorientation adheres to the broader movement looking to situate the environment alongside human beings as core protected entities under international law.[44] It proceeds on the understanding that human well-being is reliant on a sustainable environment,[45] while also recognizing the intrinsic value of protecting the environment *per se*, irrespective of its utility to human beings.[46] The context of reprisals is particularly important for environmental protection – as Dinstein observes, an "obvious constraint of belligerent reprisals relates to the protection of the natural environment" because "[t]he interest in preserving the natural environment is shared by mankind as a whole".[47] This protection has both anthropocentric and ecocentric facets; in the latter sense it can extend to elements of the environment including remote areas and ecosystems which do not directly benefit human life.

In responding to calls in the literature to increase the environmental protection offered by international criminal justice,[48] this article conducts an original inquiry.[49] Reprisals have hitherto been disregarded as a ground for criminal prosecution. They were not included as a crime in the Rome Statute of the ICC,[50] and have instead been used as a shield by defence teams seeking to avoid their clients' liability for violations of IHL.[51] Reorienting the relevance of reprisals away from a justification for serious harm to the environment and towards a basis for prosecution thereof enhances the ecocentric protection provided by international law.

At the operational level of achieving practical advances in protecting nature, prosecution is critical for deterrence, which constitutes an important tool for environmental protection.[52] The International Committee of the Red Cross

44 See F. J. Yuzon above note 38.

45 Nuclear Weapons Advisory Opinion, above note 16, p. 241 ("[T]he environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn").

46 See, e.g., UNGA Res. 76/300 ("Recognizing that sustainable development, in its three dimensions (social, economic and environmental), and the protection of the environment, including ecosystems, contribute to and promote human well-being and the full enjoyment of all human rights, for present and future generations").

47 Y. Dinstein, above note 24, para. 1045.

48 See, e.g., Richard A. Falk, "Environmental Warfare and Ecocide – Facts, Appraisal, and Proposal", *Bulletin of Peace Proposals*, Vol. 4, No. 1, 1973; Anastacia Greene, "The Campaign to Make Ecocide an International Crime: Quixotic Quest or Moral Imperative?", *Fordham Environmental Law Review*, Vol. 30, No. 1, 2019.

49 Previous works on reprisals against the natural environment have called for the use of such reprisals to be "further constrained" but have not examined the relevance of reprisals against the natural environment for criminal prosecutions: see, e.g., S.-E. Pantazopoulos, above note 28, p. 66.

50 Of the multiple principles and provisions of IHL which directly or indirectly protect the environment, only one was included in the Rome Statute of the ICC, namely the war crime under Article 8(2)(b)(iv), and that crime was framed in highly restrictive terms: see M. Gillett, above note 13, pp. 94–114, 131. Consequently, it is important to explore other means of prosecuting environmental harm, such as through the criminalization of reprisals against the environment.

51 See the discussion below on the *Kupreškić* and *Martić* cases before the ICTY, under the heading "Elements and Etymology of Belligerent Reprisals".

52 See Philippe Kirsch, "The Role of the International Criminal Court in Enforcing International Criminal Law", *American University International Law Review*, Vol. 22, No. 4, 2007, p. 539.

(ICRC) and the International Law Commission (ILC) have both explicitly recognized that reprisals against the natural environment are prohibited as a matter of IHL.[53] But legal rules directed to conflicting parties are not sufficient to achieve accountability and deterrence, as they are applicable to abstract entities such as States and other parties to conflicts. Instead, criminal sanctions against decision-makers (specifically the military and political leadership, given that reprisals require that level of authorization, as discussed below[54]) constitute the most direct means of enforcing international law. As observed by the judges of the International Military Tribunal at Nuremberg, "crimes are committed by men, not by abstract entities, and only by punishing individuals who commit such crimes can the provisions of international law be enforced".[55] Convictions under ICL also form the basis for reparations orders, which could encompass environmental remediation and thereby constitute an important tool in redressing harm to nature.[56] Moreover, the possibility of criminal sanctions for reprisals against the environment sends a symbolic message[57] by placing those acts on a par with other atrocity crimes. Given that few individual cases are prosecuted as atrocity crimes before the ICC or other international (or internationalized) courts, the symbolism of recognizing the criminal nature of such reprisals will be of equal or even greater impact in deterring potential perpetrators of harm to the environment.

In light of the anthropogenic threat to the environment, the ICC Office of the Prosecutor's 2016 case selection guidelines state that it will pay "particular consideration to crimes that are committed by means of, or that result in, inter alia, the destruction of the environment, the illegal exploitation of natural resources or the illegal dispossession of land".[58] Yet the only provision under the Rome Statute explicitly referring to the natural environment, Article 8(2)(b)(iv),[59] is a war crime set out in such restricted terms that it is inapplicable in most conceivable circumstances.[60] Consequently, the potential for reprisals against the natural environment to be criminalized *per se* presents a novel potential basis of liability. Additionally, the occurrence of reprisals being undertaken against the natural environment is significant for prosecutions of environmental harm under

53 See ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts*, in *Report on the International Law Commission: Seventy-Third Session*, UN Doc. A/77/10, 2022 (ILC Draft Principles), Principle 15; ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict*, Geneva, 2020 (ICRC Guidelines), Rule 4.

54 See below under the heading "Elements and Etymology of Belligerent Reprisals".

55 IMT, *Trial of the Major War Criminals before the International Military Tribunal ("Blue Series")*, Vol. 22, 1945, p. 186.

56 See Marja Lehto, *Second Report on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/728, 27 March 2019, para. 32; R. Killean, above note 35, pp. 335–337.

57 See Mark Drumbl, *Accountability for Property Crimes and Environmental War Crimes: Prosecution, Litigation, and Development*, International Center for Transitional Justice, 2009, pp. 21–22.

58 ICC Office of the Prosecutor, above note 27, para. 41.

59 Rome Statute of the International Criminal Court, UN Doc. A/CONF.183/9, 17 July 1998 (entered into force 1 July 2002) (Rome Statute).

60 See M. Gillett, above note 13, pp. 94–114, 131. See also Mark Drumbl, "International Human Rights, International Humanitarian Law, and Environmental Security: Can the International Criminal Court Bridge the Gaps?", *ILSA Journal of International and Comparative Law*, Vol. 6, No. 2, 2000, p. 319.

other existing provisions in the Rome Statute, as well as for the proposed new crime of ecocide,[61] due to its impact on proving the mental element of crimes and on disproving claims of military necessity, as detailed later in this article.[62]

Elements and etymology of belligerent reprisals

Having set out the rationale and normative context of the present inquiry, the analysis now turns to the specific parameters of reprisals. According to Frits Kalshoven, reprisals are

> intentional violations of a given rule of the law of armed conflict, committed by a Party to the conflict with the aim of inducing the authorities of the adverse party to discontinue a policy of violation of the same or another rule of that body of law.[63]

Several conditions must be met for a claimed reprisal to provide a lawful justification for violating IHL. These are set out, with some variations, by the ICRC, and by the International Criminal Tribunal for the former Yugoslavia (ICTY) Trial Chambers in the *Kupreškić*[64] and *Martić*[65] cases, as follows:

1. The sole purpose of reprisals should be to pressure the opposing party to comply with the law of armed conflict.[66]
2. Reprisals should be used only as a last resort when all other means have proven to be ineffective.

61 See Independent Expert Panel, above note 31; Matthew Gillett, "A Tale of Two Definitions: Fortifying Four Key Elements of the Proposed Crime of Ecocide", *Opinio Juris*, 20 June 2023, available at: https://opiniojuris.org/2023/06/20/a-tale-of-two-definitions-fortifying-four-key-elements-of-the-proposed-crime-of-ecocide-part-i/.

62 See below under the heading "Operational Significance of Reprisals against the Natural Environment for Litigating Criminal Responsibility".

63 Frits Kalshoven, *Constraints on the Waging of War*, Brill, Geneva, 1987, p. 65. See also Frits Kalshoven and Liesbeth Zegveld, *Constraints on the Waging of War*, Cambridge University Press, New York, 2011, p. 74 ("Belligerent reprisals are acts that wilfully violate given rules of the law of armed conflict, resorted to by a party to the conflict in reaction to conduct on the part of the adverse party that is perceived to reflect a policy of violation of the same or other rules of that body of law"); Christopher Greenwood, *Essays on War in International Law*, Cameron May, London, 2006, p. 297 ("A belligerent reprisal consists of action which would normally be contrary to the laws governing the conduct of armed conflict (the *ius in bello*) but which is justified because it is taken by one party to an armed conflict against another party in response to the latter's violation of the *ius in bello*"); V. Bílková, above note 25, pp. 33–34 ("[A] state resorting to belligerent reprisals does not truly violate IHL, since an act taken in lawful reprisals is placed outside the area covered by IHL prohibitions. The primary rules of IHL do not cease to apply but are rendered temporarily inoperative").

64 ICTY, *Kupreškić*, above note 25, para. 535.

65 ICTY, *Prosecutor v. Milan Martić*, Case No. IT-95–11-T, Judgment (Trial Chamber), 12 June 2007, paras 466–467. See also S.-E. Pantazopoulos, above note 28, pp. 54–55.

66 Y. Dinstein, above note 24, para. 1051; Dieter Fleck, "Methods of Combat", in Dieter Fleck (ed.), *The Handbook of International Humanitarian Law*, 4th ed., Oxford University Press, Oxford, 2021, section 7.42.

3. Reprisals should only be imposed after a prior and formal warning to the adversary.[67]
4. The actions taken in reprisal must be proportionate to the initial violation(s) of the law of armed conflict.[68]
5. Reprisals should only be taken pursuant to a decision made at the highest political or military level.
6. Reprisals must terminate as soon as they have achieved their purpose of putting an end to the breach which provoked them.[69]

Terminologically, the word "reprisals" (or the term "belligerent reprisals") is primarily used in the context of *jus in bello*.[70] Reprisals must be distinguished from retortion,[71] which has been described as a "severe countermeasure to the acts which it is wished to end, [which] nevertheless remains in accordance with ordinary law".[72] Legally, reprisals should also be distinguished from retaliation, which refers to actions undertaken for the motive of revenge. The claimed excuse of retaliation does not provide those launching attacks on the environment with any legal justification for their actions; if anything, admitting a retaliatory aim would undermine the legality of such attacks.[73] Reprisals also differ from the purported defence of *tu quoque*, whereby the fact that the adversary has also committed similar crimes is claimed as a defence for the accused's crimes. Attempts to raise *tu quoque* as a defence have been routinely rejected by international courts, from the war crimes trials following the Second World War[74] through to the *ad hoc* tribunals in the 1990s.[75]

The permissibility of reprisals, which continues to be debated, has divided scholarly opinion across at least three centuries. Whereas de Vitoria, Calvo and

67 ICTY, *Martić*, above note 65, paras 466–467.

68 See Nuclear Weapons Advisory Opinion, above note 16, para. 46 ("[A]ny right of recourse to such reprisals would, like self-defence, be governed inter alia by the principle of proportionality"). See also Frits Kalshoven, "Reprisals in the Second World War", in Frits Kalshoven, *Belligerent Reprisals*, Brill, Leiden, 2005, pp. 176–177 (Kalshoven explains that "an action cannot be justified as a reprisal when it is so obviously and grossly disproportionate to the illegalities giving rise to it, that the belligerent having resort to it cannot reasonably have deemed it an appropriate reaction").

69 ICTY, *Martić*, above note 65, para. 467.

70 Outside of armed conflict, the term "countermeasures" is typically used for self-help actions: see S.-E. Pantazopoulos, above note 28, p. 49; *Report of the International Law Commission to the Fifty-Third Session*, UN Doc. A/56/10, 23 April–1 June and 2 July–10 August 2001, p. 128, para. 3. See also V. Bílková, above note 25, p. 33.

71 Stuart Casey-Maslen, "The Use of Nuclear Weapons as a Reprisal under International Humanitarian Law", in Gro Nystuen, Stuart Casey-Maslen and Annie Golden Bersagel (eds), *Nuclear Weapons under International Law*, Cambridge University Press, Cambridge, 2014, pp. 173–174.

72 Jean Pictet (ed.), *Commentary on the Geneva Conventions of 12 August 1949*, Vol. 4: *Geneva Convention Relative to the Protection of Civilian Persons in Time of War*, ICRC, Geneva, 1958, pp. 227–228 ("Thus, a belligerent would be able to withdraw from civilian internees privileges he had granted them over and above the treatment laid down in the Convention").

73 F. J. Hampson, above note 23, p. 820.

74 See IMT, *US v. von Leeb et al. (High Command Case)*, in *Law Reports of the Trials of War Criminals*, Vol. 12, 1948, p. 64.

75 See, e.g., ICTY, *Kupreškić*, above note 25, para. 515; ICTY, *Prosecutor v. Milan Martić*, Case No. IT-95–11-A, Judgment (Appeals Chamber), 8 October 2008, para. 111; ICTY, *Prosecutor v. Dragomir Milošević*, Case No. IT-98–29-A, Judgment (Appeals Chamber), 12 November 2009, para. 250.

Fiore opposed their use, Grotius thought they were justifiable subject to certain conditions.[76] Nonetheless, the scope for permissible reprisals has clearly reduced over time. Under the Lieber Code of 1863, reprisals (then called retaliation) were regulated under Article 27, which stated that "[t]he law of war can no more wholly dispense with retaliation than can the law of nations".[77] The Lieber Code noted in Article 28, however, that reprisals should

> never be resorted to as a measure of mere revenge, but only as a means of protective retribution, and moreover, cautiously and unavoidably; that is to say, retaliation shall only be resorted to after careful inquiry into the real occurrence, and the character of the misdeeds that may demand retribution.[78]

Prior to the Second World War, the scope for reprisals was wider than it is today. Whereas Article 2 of the 1929 Convention on Prisoners of War prohibited reprisals against prisoners of war, reprisals against the civilian population were still arguably permissible.[79] From 1949, the Geneva Conventions excluded most reprisals against civilians.[80] Later, in the Additional Protocols of 1977, further prohibitions on reprisals were enshrined into conventional law. Several of these are directly and indirectly applicable to attacks on the natural environment, as detailed below.[81]

Despite having lost considerable favour in modern times, the logic behind reprisals must be borne in mind. Reprisals were conceived as a form of self-help, in an era prior to the period of criminal enforcement of international law. By allowing for unilateral deviation from the usual protections of IHL, they theoretically created an incentive for belligerent parties to adhere to law of armed conflict, subject to the threat of "painful consequences" from the opposing party should they fail to do so.[82] But the evident risk of reprisals turning into escalatory spirals of violence should also be heeded. It was explained during the negotiations of AP I that "often recourse to reprisals – in retaliation for the conduct, whether proven or only imputed, of the

76 See F. J. Hampson, above note 23, pp. 821–822, citing Francisco de Vitoria (Victoria), *Of the Indians, or On the Law of War Made by the Spaniards on the Barbarians* [*De Indis et de Jure Belli Relectiones*], trans. John Pawley Bate, Classics of International Law, Vol. 7, Carnegie Institution of Washington, 1917; Charles Calvo, *Le droit international théorique et pratique*, 5th ed., Guillaumin, Paris, 1896, pp. 518–519; Pasquale Fiore, *Nouveau droit international public suivant les besoins de la civilisation moderne*, 2nd ed., A. Durand et Pedone-Lauriel, Paris, 1885, p. 214; Hugo Grotius, *The Law of War and Peace*, trans. Francis W. Kelsey, Classics of International Law, Carnegie Institution of Washington, 1925, p. 624.

77 Francis Lieber, *Instructions for the Government of Armies of the United States in the Field*, General Order No. 100, War Department, Washington DC, 24 April 1863 (Lieber Code).

78 *Ibid.*, Art. 28. What we now call reprisals are referred to as "retaliation" in the Lieber Code.

79 F. Kalshoven, above note 68, pp. 176–178. Kalshoven considers that Germany's bombing of London did not satisfy the purpose and proportionality elements, as Goebbels' statement expressing disappointment that the British raid on Berlin had been too minor to provide the necessary excuse to justify enormous attacks on London undermined the purpose element by seeking further violations rather than seeking their termination.

80 Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War of 12 August 1949, 75 UNTS 287 (entered into force 21 October 1950) (GC IV), Art. 33.

81 See below under the heading "Conventional International Law Applicable to Reprisals against the Natural Environment".

82 Y. Dinstein, above note 24, para. 1041. See also Shane Darcy, "What Future for the Doctrine of Belligerent Reprisals?", *Yearbook of International Humanitarian Law*, Vol. 5, 2002, pp. 125–126.

adverse party – was invoked in justification of most atrocious cruelties perpetrated against the innocent".[83] In the worst cases, reprisals not only fail to achieve their purported aim but instead can lead to "counter-reprisals and, in the final analysis, to an escalation of atrocities inexorably contributing to make of an armed conflict a truly *Dantesque* hell".[84] Although human civilians have to be protected from the ravages of callous abuses as a priority,[85] the environment can also be victimized in cycles of escalating violence. On this basis, a detailed examination of the legal prohibition and prosecution of reprisals against the natural environment is essential, in order to forestall cycles of violence against anthropocentric and ecocentric interests alike.

Outlawing reprisals against the natural environment: A powerful yet imperfect set of prohibitions

Following on from the preceding discussion of the origin and parameters of reprisals, this section engages in a doctrinal assessment of the current status of reprisals under treaty and customary law, in both international armed conflicts (IACs) and non-international armed conflicts (NIACs). In this respect, it primarily focuses on IHL, which is important for reprisals, given that they sit at the intersection of law and military strategy. In turn, IHL is relevant for ICL,[86] as the framework and principles of IHL are incorporated into the Rome Statute of the ICC via the references to the framework of the law of armed conflict in Articles 8 and 21.[87]

In assessing these conventional provisions, a foundational point for the present discussion is the view of the ICRC and many other commentators that the natural environment is a civilian object.[88] Although the categorization of the environment as an "object" could be seen as contrary to the ecocentric ethos insofar as it implies the objectification of the environment,[89] it is better

83 S. E. Nahlik, above note 22, p. 56.

84 *Ibid.*, p. 56. See also Lassa F. L. Oppenheim, *Oppenheim's International Law*, 7th ed., Vol. 2, 1952, p. 565 ("[R]eprisals instead of being a means of securing legitimate warfare may become an effective instrument of its wholesale and cynical violation in matters constituting the very basis of the law of war").

85 Pantazopoulos notes that, from an anthropocentric viewpoint, "targeting a forest or a nature reserve, so as to induce the violating enemy State to comply with IHL is preferable to directing attacks at the civilian population with the same aim in mind". S.-E. Pantazopoulos, above note 28, p. 49.

86 See J. Wyatt, above note 7, pp. 642–643.

87 Rome Statute, above note 59, Arts 8, 21.

88 ICRC Guidelines, above note 53, para. 18 ("It is generally recognized today that, by default, the natural environment is civilian in character"), citing ILC, *Draft Principles on the Protection of the Environment in Relation to Armed Conflicts*, 2019, Principles 13–14, pp. 250–256; Nuclear Weapons Advisory Opinion, above note 16, paras 30, 32; ICTY, *Final Report to the Prosecutor by the Committee Established to Review the NATO Bombing Campaign against the Federal Republic of Yugoslavia*, 14 June 2000, paras 15, 18; Louise Doswald-Beck (ed.), *San Remo Manual on International Law Applicable to Armed Conflicts at Sea*, Cambridge University Press, Cambridge, 1995, p. 9, para. 13(c) *et al.*

89 See Brazilian Superior Court of Justice, Recurso Especial No. 1.797.175–SP (*Wild Parrot* case), 21 March 2019, pp. 5–7, referred to in Cyrus R. Vance Center for International Justice, Earth Law Center, and International Rivers, *Rights of Rivers: A Global Survey of the Rapidly Developing Rights of Nature Jurisprudence Pertaining to Rivers*, 2020.

considered as a terminological matter aimed at reimagining existing IHL provisions in order to extend their protections to the environment. Equally, despite using the term "civilian", this view does not restrict the "natural environment" to those areas or facets which are of use to humans. Instead, it is a broader conception that encompasses flora, fauna and natural spaces irrespective of their use to humans.

Conventional international law applicable to reprisals against the natural environment

The core of IHL comprises international treaties including the 1949 Geneva Conventions and their Additional Protocols of 1977. These instruments contain several land-based (non-naval and non-aerial, where there are no impacts on land)[90] prohibitions against reprisals that are potentially relevant to destruction of the natural environment.

Beginning with the Geneva Conventions, Article 33 of Geneva Convention IV (GC IV), which is applicable during IACs, prohibits reprisals against protected persons and their property.[91] The term "property" is interpreted broadly for Article 33, including "all types of property, whether they belong to private persons or to communities or the State".[92] A broad interpretation has also been given to the term "property" by the *Katanga* Trial Chamber.[93] In line with these approaches, aspects of the environment, including those not typically conceived as property, such as wild flora and fauna and hinterlands, could qualify as property for the purposes of Article 33.[94] That qualification is problematic, as discussed below,[95] but provides a means of extending IHL protections to the environment.

Looking to the Additional Protocols, after extensive debates on the issue of reprisals,[96] the final text of AP I considerably expanded the range of reprisals that are prohibited under IHL. As noted, Article 55(2) of AP I is directly and explicitly relevant to attacks on the environment, as it provides that "[a]ttacks

90 Rules prohibiting reprisals against the natural environment, such as under AP I, do not apply to naval and air warfare unless the reprisals impact civilian objects on land: AP I, Art. 49(3). See also George Walker, *The Tanker War 1980–1988: Law and Policy*, International Law Studies No. 74, Naval War College, 2000, p. 518. The current assessment is focused on the core IHL prohibitions concerning impacts on land.

91 See GC IV, Art. 33.

92 J. Pictet (ed.), above note 72, pp. 226–227.

93 ICC, *The Prosecutor v. Germain Katanga*, Case No. ICC-01/04-01/07, Judgment Pursuant to Article 74 of the Statute (Trial Chamber II), 7 March 2014, para. 892 (describing property for the war crime under Article 8(2)(e)(xii) as "moveable or immoveable, private or public [property belonging] to individuals or entities aligned with or with allegiance to a party to the conflict adverse or hostile to the perpetrator, which can be established in the light of the ethnicity or place of residence of such individuals or entities").

94 See Daniëlla Dam-de Jong, *International Law and Governance of Natural Resources in Conflict and Post-Conflict Situations*, Cambridge University Press, Cambridge, 2015, p. 217. See also JEP, above note 11, para. 523 (in which destruction of wild areas and flora and fauna is charged as the war crime of destroying enemy property).

95 See discussion of the notion of the environment as property below under the heading "Rome Statute Provisions Indirectly Applicable to Ecocentric Reprisals".

96 See F. J. Hampson, above note 23, p. 818; S. E. Nahlik, above note 22, p. 56.

against the natural environment by way of reprisals are prohibited". Several other prohibitions on reprisals in AP I are also potentially relevant to attacks on the natural environment, including:[97]

- Article 52(1): "civilian objects shall not be the object of attack or of reprisals".
- Article 53(c): concerning cultural objects and of places of worship, "it is prohibited: to make such objects the object of reprisals".
- Article 54(4): concerning objects indispensable to the survival of the civilian population, "[t]hese objects shall not be made the object of reprisals".
- Article 56(4): concerning works and installations containing dangerous forces, "[i]t is prohibited to make any of the works, installations or military objectives mentioned in paragraph 1 [dams, dykes and nuclear electrical generating stations] the object of reprisals".

More indirectly, Article 51(6) prohibits attacks against the civilian population or civilians by way of reprisals, which is relevant when attacks against a civilian population impact the environment. Other treaty-based prohibitions against reprisals, such as Article 4(4) of the 1954 Convention for the Protection of Cultural Property, which prohibits them against both human and natural cultural property "of great importance to the cultural heritage of a people", are potentially relevant.

Taking these provisions collectively, the natural environment is both directly protected from reprisals under AP I and indirectly protected through prohibitions on reprisals against several other types of entities. However, while this web of protection is substantively far-reaching, it is a conventional prohibition and is therefore restricted to States party to AP I,[98] which itself is directed to IACs. Accordingly, it is important to assess the status of restrictions on reprisals under customary international law, including during NIACs.

Customary international law applicable to reprisals against the natural environment

Moving from conventional to customary international law, the status of the prohibitions on reprisals varies considerably. For persons and their property falling within the protection of GC IV, the prohibition on reprisals is also reflected in customary international law.[99] Similarly, Rule 147 of the ICRC Customary Law Study indicates that the prohibitions on reprisals against objects cited in the 1949 Geneva Conventions and 1954 Hague Cultural Property

97 Note that the United Kingdom entered reservations against the prohibitions in Articles 51–55: AP I, Declarations and Reservations of United Kingdom of Great Britain and Northern Ireland, 28 January 1998. See also Julie Gaudreau, "The Reservations to the Protocols Additional to the Geneva Conventions for the Protection of War Victims", *International Review of the Red Cross*, Vol. 85, No. 849, 2003, pp. 159–160; Y. Dinstein, above note 24, para. 1058.

98 See Marja Lehto, *Third Report on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/750, 16 March 2022, para. 180 (noting that France and Canada considered that the prohibition of reprisals against the natural environment is a treaty-based rule, limited to IACs).

99 Y. Dinstein, above note 24, para. 1046.

Convention have attained customary law status.[100] However, for persons and objects falling outside the confines of those treaties (including the environment, to the extent that it does not qualify as an object protected under those treaties), the customary picture is more complex.

On the one hand, international criminal tribunals have concluded that reprisals against civilians are prohibited in all circumstances. In the context of a NIAC, the ICC *Mbarushimana* Pre-Trial Chamber held that "reprisals against the civilian population as such, or individual civilians, are prohibited in all circumstances, regardless of the behaviour of the other party".[101] In *Kupreškić*, the ICTY Trial Chamber held that practices had moved on since the 1970s and that all civilians are protected against reprisals under customary international law.[102] It apparently considered that the law governing reprisals applies in the same way in both IACs and NIACs, as it held that "it is not necessary … to determine whether the armed conflict was international or internal".[103]

On the other hand, the ICTY's reasoning in *Kupreškić* was called "unconvincing" by the United Kingdom, which argued that "the assertion that there is a prohibition in customary law flies in the face of most of the state practice that exists".[104] For its part, the ICRC considers that "it is difficult to conclude that there has yet crystallized a customary rule specifically prohibiting reprisals against civilians during the conduct of hostilities" but "there appears, at a minimum, to exist a trend in favour of prohibiting such reprisals".[105] This schism hints at the differing entry points to the inquiry that are taken by international courts which focus on criminalized prohibitions as opposed to IHL-centred institutions.

Of particular relevance to the natural environment are reprisals against civilian objects.[106] However, the customary status of reprisals against civilian objects is disputed.[107] Dinstein distinguishes reprisals against civilians from those directed at civilian objects, stating that "[t]he exclusion of civilian persons from the lawful scope of belligerent reprisals, spurred by basic precepts of human rights law, does not imply that every inanimate civilian object must be equally protected".[108]

100 Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), Rule 147, available at: https://ihl-databases.icrc.org/en/customary-ihl/rules.

101 ICC, *Prosecutor v. Callixte Mbarushimana*, Case No. ICC-01/04–01/10–465-Red, Decision on the Confirmation of Charges, 16 December 2011, para. 143. See also Michael N. Schmitt, "Ukraine Symposium – Reprisals in International Humanitarian Law", *Lieber Blog*, 6 March 2023, available at: https://lieber.westpoint.edu/reprisals-international-humanitarian-law/.

102 ICTY, *Kupreškić*, above note 25, para. 529. On the approach to custom formation in *Kupreškić*, see Alexandre Galand, "Approaching Custom Identification as a Conflict Avoidance Technique: *Tadić* and *Kupreškić* Revisited", *Leiden Journal of International Law*, Vol. 31, No. 2, 2018.

103 ICTY, *Kupreškić*, above note 25, para. 53.

104 UK Ministry of Defence, *The Manual of the Law of Armed Conflict*, 2005, para. 16.20.

105 ICRC Customary Law Study, above note 100, Rule 146.

106 On the environment as a civilian object, see above under heading "Conventional International Law Applicable to Reprisals against the Natural Environment".

107 S.-E. Pantazopoulos, above note 28, p. 58.

108 Y. Dinstein, above note 24, para. 1059.

Turning to reprisals against the natural environment itself, the issue is contentious, but some State practice and *opinio juris*,[109] along with notable commentators, provides a measure of support for asserting that these are prohibited as a matter of customary law. Several countries include prohibitions on reprisals against the natural environment in their military manuals.[110] While acknowledging the debates on this issue, Dinstein[111] and Schmitt[112] nonetheless consider that the collective interest of humanity in protecting the environment, as outlined above,[113] justifies outlawing reprisals against it.[114]

Principle 15 of the ILC's Draft Principles on Protection of the Environment in Relation to Armed Conflicts (ILC Draft Principles) holds that reprisals against the natural environment are prohibited in all types of armed conflict.[115] However, while Germany, Switzerland, Austria, New Zealand, Italy, the Nordic countries and the ICRC supported the text of Principle 15, they did not explicitly frame it as a customary principle.[116] Conversely, States opposed to Principle 15, such as the United States, the United Kingdom, France and Israel (the first three of which are declared nuclear powers and the last of which reportedly has such capacity[117]), indicated that they did not consider the prohibition to reflect custom.[118] Consequently, in its commentary to the Principle 15, the ILC concluded that "the customary nature of the prohibition of attacks against the environment by way of

109 See ICJ, *North Sea Continental Shelf Cases (Federal Republic of Germany v. Denmark; Federal Republic of Germany v. Netherlands)*, Judgment, 20 February 1969, *ICJ Reports 1969*, p. 4, para. 77 ("Not only must the acts concerned amount to a settled practice, but they must also be such, or to be carried out in such a way, as to be evidence of a belief that this practice is rendered obligatory by the existence of a rule requiring it. The need for such a belief, i.e., the existence of a subjective element, is implicit in the very notion of the *opinio juris sive necessitatis*").

110 See S.-E. Pantazopoulos, above note 28, p. 59, citing Australia, *The Manual of the Law of Armed Conflict*, 2006, para. 5.50; National Defence Canada, *The Law of Armed Conflict at the Operational and Tactical Levels*, Office of the Judge Advocate General, 13 August 2001, para. 1507.4.i; Danish Ministry of Defence and Defence Command Denmark, *Military Manual on International Law Relevant to Danish Armed Forces in International Operations*, 2016, p. 425, para. 2.16; Germany, Bundesministerium der Verteidigung, *Law of Armed Conflict Manual*, Joint Service Regulation 15/2, 2013, p. 60, para. 434; New Zealand Defence Force, *Manual of Armed Forces Law*, 2008, para. 17.10.4(e); Spain, Ministerio de Defensa, *El derecho de los conflictos armados*, Vol. 1, 2007, para. 3.3.c.(5); UK Ministry of Defence, above note 104, paras 16.19.1, 16.19.2.

111 Dinstein's claim appears to be a statement of general principle rather than a specific reflection on customary international law; Y. Dinstein, above note 24, para. 1045.

112 Schmitt's statement is made in the context of discussing the *Kupreškić* Trial Chamber's treatment of the customary status of reprisals: see M. N. Schmitt, above note 101.

113 See discussion above under heading "Normative and Operational Facets of the Analysis".

114 See also ILC, *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, in *Yearbook of the International Law Commission*, Vol.2, Part 2, 2001, UN Doc. A/CN.4/SER.A/2001/Add. 1, para. 7 (noting that the environment is a collective interest).

115 See ILC Draft Principles, above note 53.

116 M. Lehto, above note 98, paras 179–180.

117 The use of nuclear weapons remains debated insofar as reprisals are concerned: see S.-E. Pantazopoulos, above note 28, pp. 62–63; Thibaud de La Bourdonnaye, "Greener Insurgencies? Engaging Non-State Armed Groups for the Protection of the Natural Environment during Non-International Armed Conflicts", *International Review of the Red Cross*, Vol. 102, No. 914, 2020, p. 596; Nuclear Weapons Advisory Opinion, above note 16, Dissenting Opinion of Judge Weeramantry, pp. 320–322.

118 M. Lehto, above note 98, paras 179–180. See also S.-E. Pantazopoulos, above note 28, p. 60.

reprisals is not settled".[119] Similarly, the ICRC's *Guidelines on the Protection of the Environment in Times of Armed Conflict* (ICRC Guidelines) frame reprisals against the natural environment in relation to AP I, indicating that the ICRC does not consider the underlying prohibition to have customary status.[120] Consequently, while there is a reasonable basis to assert the customary status of reprisals against the natural environment, it is not established beyond all debate that the necessary requirements of showing general State practice and *opinio juris* in conformity with the rule have been met.[121] This lingering ambiguity has consequent effects for the criminalization of such reprisals, as discussed below.

The challenging framework governing prohibition of reprisals in NIACs

Having examined the legal status of reprisals against the natural environment, several additional observations must be set out regarding the context of NIACs. Challenging questions arise concerning reprisals under the more "rudimentary" framework governing NIACs.[122] Given that NIACs are the most frequent type of conflict, and given that the applicability of reprisals in this context has only been subjected to limited examination,[123] it is important to address the issue before examining the implications for criminal enforcement.

Reprisals are not mentioned at all in Additional Protocol II (AP II).[124] For some, this implies that reprisals are simply inapplicable to NIACs (termed the "extralegal" approach).[125] De La Bourdonnaye interprets this as prohibiting

119 ILC Draft Principles, above note 53, Principle 15, para. 3.

120 ICRC Guidelines, above note 53. See also S.-E. Pantazopoulos, above note 28, p. 61.

121 See ICJ, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States)*, Judgment on Jurisdiction and Admissibility, 26 November 1984, *ICJ Reports 1984*, para. 186 (stating that "the conduct of States should, in general, be consistent with such rules, and that instances of State conduct inconsistent with a given rule should generally have been treated as breaches of that rule, not as indications of the recognition of a new rule").

122 S.-E. Pantazopoulos, above note 28, p. 56; V. Bílková, above note 25, pp. 31, 35; Samuel V. Jones, "Has Conduct in Iraq Confirmed the Moral Inadequacy of International Humanitarian Law? Examining the Confluence between Contract Theory and the Scope of Civilian Immunity during Armed Conflict", *Duke Journal of Comparative and International Law*, Vol. 16, No. 2, 2006, pp. 292–293.

123 V. Bílková, above note 25, pp. 32, 36; Shane Darcy, *Collective Responsibility and Accountability under International Law*, Transnational Publishers, Leiden, 2007, pp. 166–172.

124 Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978) (AP II). See S. E. Nahlik, above note 22, p. 64 ("However, toward the end of the fourth session of the Conference, Protocol II as a whole (for reasons that lead beyond the scope of the present study) was opposed by a comparatively strong group of delegations. After much negotiation, when it was clear that Protocol II could be saved only at the price of being considerably shortened, none of the articles that the supporters of Protocol II succeeded in saving contained any clause on reprisals under any denomination. At the most, the prohibition of 'collective punishments' and of 'taking of hostages,' listed among the 'fundamental guarantees,' could perhaps be considered to give the victims of non-international conflicts some minimum protection against measures comparable to reprisal").

125 V. Bílková, above note 25, p. 35. Similarly, Schmitt, above note 101, notes: "It must be remembered that reprisal operates as a circumstance precluding the wrongfulness of an otherwise unlawful act or omission under international humanitarian law. Thus, this is not a case of needing to find State practice and *opinio juris* to establish crystallization of a *prohibition*." See also ICRC Customary Law Study, above note 100, Rule 148, pp. 526–528 (parties to NIACs "do not have the right to resort to belligerent reprisals").

attacks against the natural environment by way of reprisal.[126] For others, the silence on reprisals necessitates a "permissive" approach whereby parties to conflict "are free to use reprisals without any legal impediments".[127] A third "restrictive" approach would see reprisals available in NIACs, but subject to the exacting parameters imposed on them, which are discussed above.[128]

Although the extralegal approach may align with the theoretical framework of IHL,[129] when it comes to individual criminal responsibility and legal procedure before international courts, a different set of considerations arise, including the onus on the prosecution to prove its case beyond reasonable doubt, the legality principle, and the latter's associated edict of *in dubio pro reo*, whereby ambiguity must be read in favour of the accused.[130] In this context, the extralegal approach of categorically excluding a potential legal justification will not sit well with criminal judges.

This conclusion is borne out by the fact that international courts confronted with parties claiming to have been conducting lawful reprisals have gravitated towards strictly interpreting the requirements for those reprisals' applicability.[131] For present purposes, the analysis presupposes that there is a possibility of the doctrine of reprisals being allowed in IACs and NIACs, but that it would always at minimum be limited by the usual customary requirements of purpose, last resort, proportionality, decisions at the policy level and so forth, as set out above.[132]

Turning to reprisals against the natural environment in NIACs, the lack of any provision in AP II corresponding to Article 55(2) of AP I creates a broad scope for interpretation. As with many IHL principles, those relating to reprisals in IACs are not necessarily automatically transferable to NIACs.[133] Permanent sovereignty over natural resources is usually considered to vest in the State,[134] and international environment law obligations are usually considered to fall on the national government.

On this issue, Principle 15 of the ILC Draft Principles, which prohibits reprisals against the natural environment, is applicable to all types of conflicts. However, noting the legal uncertainty regarding its customary status, the ILC expressly states that "the principle is not intended to qualify or alter the scope and meaning of existing rules on reprisals under either conventional or

126 T. de La Bourdonnaye, above note 117, p. 589.
127 See V. Bílková, above note 25, p. 35.
128 See above under the heading "Elements and Etymology of Belligerent Reprisals". See also ICRC Customary Law Study, above note 100, Rule 145 (referring to the "stringent" rules governing reprisals in IACs).
129 See V. Bílková, above note 25, pp. 59–64.
130 See, *inter alia*, Rome Statute, above note 59, Art. 22.
131 See above under the heading "Elements and Etymology of Belligerent Reprisals".
132 See above under the heading "Elements and Etymology of Belligerent Reprisals".
133 See David Turns, "Implementation and Compliance", in Elizabeth Wilmshurst and Susan Breau (eds), *Perspectives on the ICRC Study on Customary International Humanitarian Law*, Cambridge University Press, Cambridge, 2007, p. 372; S.-E. Pantazopoulos, above note 28, pp. 57–58.
134 See D. Dam-de Jong, above note 94, p. 223.

customary international law".[135] Given the foundational importance of IHL for ICL, this uncertainty regarding the customary international law status of the prohibition on reprisals in NIACs[136] is legally unsatisfactory. It could arguably manifest in judges entering a finding of *non liquet*[137] in criminal proceedings, which would undermine the justiciability and thereby the enforceability of the legal protections of the environment against individuals who order attacks causing serious ecocentric harm.

Criminalizing ecocentric reprisals: The key to enforcement

Building on the preceding foundational survey of IHL, the assessment now turns to whether the doctrine of reprisals against the natural environment may have a role in ICL. The exegesis is dual-faceted, looking at the criminalization of such reprisals *per se* as well as their relevance for prosecuting environmental harm under established Rome Statute crimes. This focus on enforcement is important. Without enforcement mechanisms, prohibitions risk lacking a significant deterrent effect and will therefore have limited, if any, influence on the decisions of individual perpetrators of attacks on the natural environment.[138] Moreover, ICL can obviate any justification for parties to engage in the horizontal self-help mechanism of reprisals,[139] and can instead induce compliance through the credible threat of "the prosecution and punishment of war crimes and crimes against humanity by national or international courts".[140] By examining the criminalization of reprisals, the present study looks to open up a new avenue for enforcing environmental protections. The potential addition of a new basis for penal sanctions concerning reprisals is operationally significant. It would expand the options available for prosecuting environmental harm under ICL (currently, Article 8(2)(b)(iv) of the Rome Statute is the only direct means of doing so). Normatively, it would demonstrate how an ecocentric reconceptualization of IHL can flow into increased means of enforcing environmental protections under ICL.[141]

A prefatory issue is whether adding the label of "reprisals" to attacks on the natural environment could in fact *exclude* liability.[142] While this may fly in the face

135 See ILC Draft Principles, above note 53, commentary, p. 148.
136 V. Bílková, above note 25, pp. 31–32. But see T. de La Bourdonnaye, above note 117, p. 589.
137 See Daniel Bodansky, "Non Liquet", in *Max Planck Encyclopedia of Public International Law*, 2006.
138 See P. Kirsch, above note 52, p. 539. Other measures, such as sanctions, can also impact decision-makers, though through less direct means than criminal punishment.
139 See V. Bílková, above note 25, p. 33.
140 See ICTY, *Kupreškić*, above note 25, para. 520.
141 See above under the heading "Normative and Operational Facets of the Analysis".
142 An argument on this basis could potentially be brought under Article 8 of the Rome Statute, when assessing whether a war crime had occurred, as discussed below in note 147. Alternatively, it could be brought under Article 31(3), which provides that "[a]t trial, the Court may consider a ground for excluding criminal responsibility other than those referred to in paragraph 1 where such a ground is derived from applicable law as set forth in article 21", as Article 21(1)(b) refers to the "established principles of the international law of armed conflict".

of the emphatic prohibition of such reprisals in AP I, there are non-States Parties which are arguably not bound by AP I's terms.[143] Accused persons from these States may attempt to argue that reprisals are available to excuse the unlawfulness of such attacks against the natural environment.[144] However, with eminent experts such as Schmitt and Dinstein arguing that reprisals against the natural environment should be prohibited in all circumstances,[145] and the ICC and ICTY's jurisprudence indicating a restrictive view of reprisals,[146] it is far from evident that the ICC would accept even the potential applicability of reprisals as a justification in this respect.[147] Even if reprisals against the natural environment could be raised as a potential justification, they would almost certainly be subject to the exacting conditions (last resort, proportionality and so forth) set out above. Precedents such as the *Martić* case show that an accused will struggle to fulfil these preconditions required to claim a justification of reprisals. In *Martić*, the Trial and Appeals Chambers found that Martić's claimed excuse of reprisals did not avail as (1) the shelling of Zagreb was not a measure of last resort and (2) the Republika Srpska Krajina authorities had not formally warned the Croatian authorities before shelling Zagreb.[148] Given that the conditions are cumulative, the likelihood of an accused successfully using reprisals as a justification for violations during armed conflict is negligible.

Do reprisals against the natural environment constitute a war crime *per se*?

The most direct basis for accountability and enforcement would arise if the prohibition on reprisals against the natural environment entailed individual criminal responsibility in and of itself.[149] To amount to a war crime, such reprisals would have to constitute a "serious" violation of IHL.[150]

143 States Parties that entered reservations to the coverage of reprisals concerning the environment could also potentially propose this argument.

144 See above under the heading "Elements and Etymology of Belligerent Reprisals".

145 See above under the heading "Customary International Law Applicable to Reprisals against the Natural Environment".

146 See above under the heading "Customary International Law Applicable to Reprisals against the Natural Environment".

147 An accused may seek to introduce reprisals as a justification for violating IHL, relying on the reference to the law of armed conflict in Article 8 of the Rome Statute. Alternatively, an accused may seek to present such a justification as a defence under Article 31 of the Rome Statute. The approach at the ICTY indicates that reprisals will be assessed as a potential justification rather than a defence (see ICTY, *Martić*, above note 75, para. 263, analyzing reprisals as a "justification"), with the Court assessing whether the accused demonstrated the preconditions, without elaborating on whether the burden of proving these preconditions falls on the prosecution or the accused.

148 ICTY, *Martić*, above note 65, paras 467–468; ICTY, *Martić*, above note 75, para. 263.

149 See, e.g., ICTY, *Prosecutor v. Stanislav Galić*, Case No. IT-98–29-A, Judgment (Appeals Chamber), 30 November 2006, paras 87–95. This is the fourth *Tadić* condition: "the violation of the rule must entail, under customary or conventional law, the individual criminal responsibility of the person breaching the rule".

150 ICRC Customary Law Study, above note 100, Rule 156.

Looking to the core instruments of IHL (the Geneva Conventions and Additional Protocols), reprisals against the natural environment are not listed as grave breaches.[151] Turning to the ICC, reprisals are not *per se* included in the Rome Statute as war crimes.[152] The only war crime provision that explicitly addresses attacks on the natural environment is Article 8(2)(b)(iv), which prohibits

> [i]ntentionally launching an attack in the knowledge that such attack will cause incidental loss of life or injury to civilians or damage to civilian objects or widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated.

There is considerable overlap with a putative crime of reprisals against the natural environment. The term "attack" lends itself to a similar interpretation in Article 8(2)(b)(iv) of the Rome Statute to that found in Article 55(2) of AP I.[153] Nonetheless, the two notions are not coterminous; specifically, Article 8(2)(b)(iv) is limited to IACs and contains the conjunctive elements of widespread, long-term and severe, as well as the need to show excessive harm,[154] which render it narrower and more stringent than a general prohibition on reprisals against the natural environment.[155]

More broadly, Drumbl has argued that there is "residual jurisdiction" under Article 8 of the Rome Statute for additional war crimes, going beyond the enumerated ones.[156] However, this conflicts with the requirement of reading the Statute strictly, under Article 22(2), whereby "[t]he definition of a crime shall be strictly construed and shall not be extended by analogy" and "[i]n case of ambiguity, the definition shall be interpreted in favour of the person being investigated, prosecuted or convicted".[157] Consequently, there is no specific basis criminalizing reprisals against the natural environment under the Rome Statute or IHL.

151 See GC IV, Art. 147; AP I, Art. 85.

152 See Rome Statute, above note 59, Art. 8.

153 Contrastingly, "attack" is used differently for crimes against humanity, as defined in Article 7(2) of the Rome Statute as a "course of conduct involving the multiple commission of acts referred to in [Article 7(1)] … pursuant to or in furtherance of a State or organizational policy to commit such attack". See also the discussion of William Schabas's concerns regarding the term "attack" in the context of the *Al-Mahdi* proceedings, below under the heading "Operational Significance of Reprisals against the Natural Environment for Litigating Criminal Responsibility".

154 See M. Drumbl, above note 60, p. 319.

155 In its 1996 Draft Code of Crimes against the Peace and Security of Mankind, the ILC included Article 20 (g), which lists the following as a war crime applicable in IAC or NIAC: "in the case of armed conflict, using methods or means of warfare not justified by military necessity with the intent to cause widespread, long-term and severe damage to the natural environment and thereby gravely prejudice the health or survival of the population and such damage occurs". ILC, *Draft Code of Crimes against the Peace and Security of Mankind*, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 1996, p. 56. This could provide "support for the contention that there is a customary prohibition against disproportionate environmental attacks during NIACs that entails individual criminal responsibility": M. Gillett, above note 21, p. 242.

156 Mark Drumbl, "Waging War against the World: The Need to Move from War Crimes to Environmental Crimes", *Fordham International Law Journal*, Vol. 22, No. 1, 1998, pp. 138–139, referring to the *chapeau* of Article 8(2)(b).

157 See William Schabas, "Al Mahdi Has Been Convicted of a Crime He Did Not Commit", *Case Western Reserve Journal of International Law*, Vol. 49, No. 1, 2017, p. 77. Schabas states that "[i]n this respect, the International Criminal Court may differ from other international criminal tribunals that have been set up on a temporary basis and where a more liberal and teleological approach to judicial

In the absence of definitive or explicit criminalization of reprisals against the natural environment under the Rome Statute or the main instruments of IHL, the analysis now turns to customary international law. Several soft-law instruments, such as the World Charter for Nature and the Rio Declaration, contain broad hortatory statements about protecting the environment from warfare, but nothing in the nature of a precise criminal prohibition.[158] The ILC has referred to "massive pollution of the atmosphere or of the seas" as "international crimes",[159] but these broad terms are not framed with the precision of a criminal provision, and the ILC did not delve into key considerations such as individual criminal responsibility.[160]

Article 15 of the ILC Draft Principles contains a more precise prohibition on reprisals against the natural environment. However, this cannot be used to support criminalization, as Principle 9(3) provides that "[t]he present draft principles are also without prejudice to: (a) the rules on the responsibility of non-State armed groups; (b) the rules on individual criminal responsibility".

Based on the foregoing, it can be concluded that there is no specific war crime of committing reprisals against the natural environment, whether as a matter of conventional or customary international law.

Using other war crimes to indirectly prosecute reprisal attacks against the natural environment

In lieu of a direct war crime of attacking the environment by way of reprisal, a variety of other war crimes are nonetheless potentially applicable to this conduct.

IHL provisions indirectly applicable to ecocentric reprisals

Regarding grave breaches of IHL, reprisals against the natural environment could potentially qualify under several prohibitions contained in Article 147 of GC IV

interpretation has been adopted", and notes that according to Judge Van den Wyngaert, "[b]y including this principle in Part III of the Statute, the drafters wanted to make sure that the Court could not engage in the kind of 'judicial creativity' of which other jurisdictions may at times have been suspected."

158 UNGA Res. 37/7, 28 October 1982, Annex: World Charter for Nature, Principle 5: "Nature shall be secured against degradation caused by warfare or other hostile activities." Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26, Vol. 1, 13 June 1992, Principle 24: "Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary."

159 ILC, *Report of the Commission to the General Assembly on the Work of Its Twenty-Eighth Session*, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 1976, UN Doc. A/CN.4/SER.A/1976/Add.l (ILC 1976 Report), pp. 95–96. See also ILC, "Chapter IV Peremptory Norms of General International Law (Jus Cogens)", in *Report of the International Law Commission on the Work of Its Seventy-Third Session*, UN Doc. A/CN.4/L.960 + Add.1, 17 June 2022, p. 88; M. Drumbl, above note 156, p. 139. See also R. Pereira, above note 25, p. 187.

160 ILC 1976 Report, above note 159, paras 64–71. See also Jessica E. Seacor, "Environmental Terrorism: Lessons from the Oil Fires of Kuwait", *American University Journal of International Law and Policy*, Vol. 10, No. 1, 1994, p. 523, cited in M. Drumbl, above note 156, p. 142 (examining criminal prohibitions on environmental harm and concluding that the "current international legal framework is vague and unenforceable in environmental matters").

and Article 85 of AP I.[161] Under Article 147, grave breaches of GC IV include extensive destruction and appropriation of "protected" property. This covers both private and public property, as set out above.[162] Noting that the natural environment is considered a civilian object,[163] and that in many States components of the natural environment will be public (or private in some cases) property, any extensive destruction of the natural environment would *prima facie* violate this prohibition. Labelling the environment as property in order to justify the criminalization finds precedent in the ILC's Draft Code of Crimes against Peace and Mankind. In that document, Article 20(g) addresses harm to the environment, but was justified as a criminal sanction by relying *inter alia* on Article 23(g) of the Hague Regulations of 1907, which focuses on the destruction or seizure of enemy property.[164] Under national constitutions, the environment is often characterized as the property of the State;[165] this also accords with the principle of permanent sovereignty.[166] However, labelling the environment as property is problematic from an ecocentric viewpoint,[167] particularly for areas such as the global commons and for areas that are traditionally home to indigenous peoples, as detailed below.[168]

As a matter of IHL, if the natural environment is made into a military object, for example through the use of a forest as a military base or a hilltop location for launching attacks, then it would no longer qualify as a civilian object and its destruction would not qualify as a war crime under Article 147.[169] The fact that the acts were undertaken as reprisals could significantly expand the scope of applicable circumstances for the crime of extensive destruction; according to Dörmann, whereas extensive destruction is usually limited to

161 States are under an obligation to impose penal sanctions to punish grave breaches of these provisions: GC IV, Art. 146; AP I, Art. 85.

162 See above note 92 and accompanying text.

163 ICRC Guidelines, above note 53, para.18.

164 Noting that the wording of Art. 20(g) is based on Articles 35 and 55 of AP I, violations of which "are not characterized as a grave breach entailing individual criminal responsibility under the Protocol", the ILC explained that it had added "three additional elements which are required for violations of the Protocol to constitute a war crime" – namely, military necessity, the specific "intent to cause widespread, long-term and severe damage to the natural environment and thereby gravely prejudice the health or survival of the population", and the fact that such damage actually occurred as a result of the prohibited conduct.

165 See, e.g., the Constitution of Colombia, wherein Article 332 provides that the State is the owner of the subsoil and of the country's natural, non-renewable resources without prejudice to the rights acquired and fulfilled in accordance with prior laws; and Article 63 provides that property in public use, natural parks, communal lands of ethnic groups, security zones, the archaeological resources of the nation, and other property determined by law are inalienable, imprescriptible and not subject to seizure.

166 ICJ, *Case Concerning Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgment, 19 December 2005, para. 244.

167 See M. Gillett, above note 13, p. 118.

168 See discussion on the notion of the environment as property below under the heading "Rome Statute Provisions Indirectly Applicable to Ecocentric Reprisals".

169 William H. Boothby, *Weapons and the Law of Armed Conflict*, 2nd ed., Oxford University Press, Oxford, 2016, p. 85; S.-E. Pantazopoulos, above note 28, p. 59.

occupied territory, if the destruction is undertaken as a form of reprisal, then it is not so territorially limited.[170]

Turning to AP I, reprisals against the natural environment would qualify as war crimes (grave breaches) if they involved:

- Article 85(3)(b): launching indiscriminate attacks on civilian objects with knowledge that the attacks would result in excessive damage to the natural environment (as a civilian object);[171]
- Article 85(3)(c): launching attacks on works or installations containing dangerous forces (such as dams or nuclear power plants) with knowledge that the attacks would result in excessive[172] damage to the natural environment (whether as a civilian object or in some cases as a military objective);[173] or
- Article 85(4)(d): attacking a facet of the natural environment which is a place of worship constituting the cultural or spiritual heritage of peoples (such as natural World Heritage Sites), and to which special protection has been given by special arrangement, and causing extensive destruction to it (presuming the site had not been used in support of the military effort in the sense of Article 53(b) of AP I), whether as a civilian object or in some cases as a military objective.[174]

On first view, these provisions criminalize a significant range of activities that cause environmental destruction, particularly in relation to attacks on dams, nuclear power plants, and places of worship constituting cultural and spiritual heritage. However, the expansive potential is somewhat limited by the requirement that, to constitute war crimes, the relevant attacks would have to be committed wilfully and cause death or serious injury to the body or health of persons.[175] On this

170 Knut Dörmann *et al.*, *Elements of Crimes under the Rome Statute of the International Criminal Court: Sources and Commentary*, Cambridge University Press, Cambridge, 2004, p. 83 (apparently based on the fact that Article 33 does not contain the reference to destruction by the "occupying power" which is contained in Article 53). In all circumstances, the crime under Article 8(2)(b)(iv) requires that the destruction was not justified by military necessity and was carried out unlawfully and wantonly

171 See Rome Statute, above note 59, Art. 8(2)(b)(ii) for the progeny criminal provision. There is no corresponding provision in the Rome Statute for NIACs.

172 This is defined in Article 57(2)(a)(iii) as "incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated".

173 There is no specific progeny criminal provision under the Rome Statute for this IHL prohibition. Under Article 56 of AP I, this prohibition also covers attacks on objects which are military objectives, "if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population. Other military objectives located at or in the vicinity of these works or installations shall not be made the object of attack if such attack may cause the release of dangerous forces from the works or installations and consequent severe losses among the civilian population."

174 See Rome Statute, above note 59, Art. 8(2)(b)(ix) and (e)(iv) for the progeny criminal provisions. However, the Rome Statute provisions are of limited, if any, relevance to the natural environment, as they are framed more narrowly than AP I's terms (the Rome Statute refers to "[i]ntentionally directing attacks against buildings dedicated to religion, education, art, science or charitable purposes, historic monuments, hospitals and places where the sick and wounded are collected, provided they are not military objectives").

175 AP I, Art. 85(3).

basis, attacks purely directed against the environment which did not cause death or serious injury would not qualify as grave breaches under AP I.

Rome Statute provisions indirectly applicable to ecocentric reprisals

Regarding ICL, the most comprehensive treaty is the Rome Statute of the ICC. Reprisals against the natural environment could fulfil the elements of a small number of war crimes in IACs under Article 8 of the Rome Statute.

As mentioned above, the only Rome Statute provision mentioning the natural environment is Article 8(2)(b)(iv), which is limited to IACs.[176] This provision is subject to such stringent requirements – including the conjunctive elements of widespread, long-term and severe damage, a multi-part *mens rea* test, and a proportionality assessment from the perspective of the commander – that any conviction under its terms is unlikely.[177] Nonetheless, as discussed below, a reprisals-type scenario opens up possible means of meeting those restrictive elements.

Additionally, some other provisions that do not mention the environment could nonetheless be used to indirectly prosecute reprisals against it. First, there is Article 8(2)(a)(iv), setting out the crime of extensive destruction and appropriation of property not justified by military necessity and carried out unlawfully and wantonly. This essentially corresponds to the grave breach under Article 147 of GC IV (as qualified by Article 33), as discussed above. Conceptualizing the environment as property would allow reprisals against nature to be prosecuted under this provision – although it would also require the commodification of the natural environment, by viewing it simply as the property of humans, which runs counter to the ecocentric animus.[178] A related provision is Article 8(2)(b)(xiii) on destroying or seizing the enemy's property, but this would similarly require conceptualizing the targeted environmental feature as property, which is problematic,[179] and qualifying it as property belonging to the opposing side,[180] which would potentially exclude aspects of the environment falling under the perpetrating side's ownership – a notable gap in coverage, particularly in scorched-earth-type scenarios.[181]

Second, there is Article 8(2)(b)(ii), which prohibits intentionally directing attacks against civilian objects – that is, objects which are not military objectives. On the presumption that the environment (or targeted part thereof) is civilian in nature, this is a significant basis for prosecution, albeit limited to IACs.[182]

176 See above notes 154–155 and accompanying text.
177 M. Gillett, above note 13, pp. 94–114, 131.
178 Ricardo Pereira, *Environmental Criminal Liability and Enforcement in European and International Law*, Koninklijke Brill, Leiden, 2015, pp. 93–94.
179 See discussion below on the notion of the environment as property.
180 Rome Statute, above note 59, Elements of Crimes, p. 25 (element 3 of Art. 8(2)(b)(xiii)).
181 See John A. Cohan, "Modes of Warfare and Evolving Standards of Environmental Protection under the International Law of War", *Florida Journal of International Law*, Vol. 15, No. 4, 2003, p. 500.
182 See ICRC Guidelines, above note 53, para. 315.

For NIACs, there are fewer paths to prosecution of reprisal attacks on the natural environment under the Rome Statute. The provision with the most potential applicability is Article 8(2)(e)(xii), which prohibits destroying or seizing the property of an adversary unless such destruction or seizure be imperatively demanded by the necessities of the conflict.[183]

However, as mentioned above, the requirement that the target of the destruction be "property" of the adversary can be problematic for the natural environment. Many aspects of the natural environment are not considered property *per se*, most notably the global commons such as Antarctica, the high seas or outer space,[184] and indigenous groups may well contest Western notions of ownership over natural features of the landscape.[185] Categorizing the natural environment as "property" risks sending a symbolic message that runs counter to efforts to enforce eco-sensitive international law, and may create a conceptual basis for profit-seeking persons or entities to attempt to acquire property rights over these areas of the natural environment. The gains in potential prosecutorial pathways must be carefully weighed against the risk of the unintended commodification of the natural environment. Moreover, Article 8(2)(e)(xii) would not cover the destruction of components of the natural environment belonging to the perpetrator's side as a reprisal. In this way, there is a risk that this could create an asymmetric application of the prohibition, potentially violating the IHL principle of the equal application of the law between belligerents.[186] Because environmental features considered as property would typically vest in the State,[187] the opposing forces could be covered by the crime of destroying or seizing it, whereas there would be no corresponding liability for the State's armed forces.

Aside from those mentioned above, less directly applicable war crimes that could nonetheless potentially encompass aspects of environmental harm include pillage under Article 8(2)(b)(xvi) and (e)(v) of the Rome Statute,[188] and intentionally using starvation of civilians as a method of warfare under Article 8 (2)(b)(xxv) for IACs and Article 8(2)(e)(xix) for NIACs.

In sum, while there is some promise in pursuing the indirect route to prosecuting reprisals against nature under other war crimes, each crime brings

183 See K. Dörmann *et al.*, above note 170, p. 145 (noting that Article 8(2)(e)(xii) is derived to a large extent from Article 23(g) of the Hague Regulations and that the Hague Regulations do not apply explicitly to NIACs. Given that AP II also does not contain a prohibition on directing attacks against civilian objects, there is no explicit treaty reference for this offence in IACs; however, the general protection in Article 13(1) of AP II may be broad enough to encompass it). See, further, ICRC Customary Law Study, above note 100, p. 27, citing Michael Bothe, Karl Joseph Partsch and Waldemar A. Solf (eds), *New Rules for Victims of Armed Conflicts: Commentary on the Two 1977 Protocols Additional to the Geneva Conventions of 1949*, Martinus Nijhoff, The Hague, 1982, p. 677.

184 M. Drumbl, above note 156, p. 141; R. Pereira, above note 178, pp. 93–94; M. Gillett, above note 13, p. 118–121, 233.

185 See JEP, above note 11, Concurring Opinion of Judge Belkis.

186 Adam Roberts, "The Equal Application of the Laws of War: A Principle under Pressure", *International Review of the Red Cross*, Vol. 90, No. 872, 2008, p. 932.

187 D. Dam-de Jong, above note 94, pp. 223–224.

188 Though this has a highly circumscribed definition under the Rome Statute and makes for an awkward fit with environmental destruction: M. Gillett, above note 13, pp. 117–119.

with it specific elements that will require proof to the requisite standard. Enforcement via these alternative prohibitions is imperfect, because the specific harmful conduct of conducting reprisals against the natural environment will not be the raison d'être underlying the criminal provision. Moreover, several of these routes will require the environment to be conceptualized as property, which has provoked concerns of expropriation of land rights, particularly from the indigenous perspective. Nonetheless, while imperfect, the use of alternative provisions does provide viable legal means to redress situations of reprisals against the natural environment, which is particularly important during times of armed conflict. To fulfil these legal avenues, facts and evidence will be the necessary sustenance. In this respect, the factual scenario of reprisal attacks will present several uniquely significant factors for litigation strategies, as is explored in the following section.

Operational significance of reprisals against the natural environment for litigating criminal responsibility

Having conducted the survey of the doctrinal basis for prosecuting reprisals against the natural environment, the examination now turns to the operational significance of the scenario of reprisals for prosecutions of environmental harm under existing international crimes. Applying the reprisals scenario to the framework of ICL, with a particular focus on the natural environment, produces several conclusions of relevance to prosecuting this type of harm.

First, because the environment is presumptively a civilian object,[189] there is a clear path to prosecute its destruction under the label of directing attacks against civilian objects, for example under Article 8(2)(b)(ii) of the Rome Statute or Article 85(3)(b) of AP I. In fact, it may be more feasible to prosecute reprisal attacks on the natural environment in this way than attacks on other types of civilian objects, such as houses or vehicles. This is because there is a stronger basis to argue that reprisal attacks on the natural environment are banned as a matter of custom than there is for reprisals against more traditional civilian objects.[190] Prosecuting a reprisal against the natural environment under the label of deliberate attacks on civilian objects avoids the potentially insurmountable challenge of meeting the triple conjunctive requirements of widespread, long-term and severe harm to the natural environment under Article 8(2)(b)(iv) of the Rome Statute.[191]

Second, the inherently intentional facet of reprisals bears far-reaching implications for prosecuting attacks on the environment. In asserting an IHL justification under the doctrine of reprisals, an accused would have to admit to purposefully targeting the natural environment. Indeed, if the act was not

189 See above note 14 and accompanying text.

190 See above referring to Schmitt and Dinstein's argument that reprisals against the natural environment should not be permitted. M. N. Schmitt, above note 101; Y. Dinstein, above note 24; S.-E. Pantazopoulos, above note 28.

191 Y. Dinstein, above note 24, para. 832.

undertaken as an intentional means of forcing the opposing side to desist from its own violations, it will not qualify as a reprisal.[192] For criminalization, intentionality is always a significant factor, and is often the most difficult to prove. Defendants in environmental harm cases will typically deny any intent to cause ecocentric harm and will instead argue that the harm was an unfortunate incidental outcome of their actions, perhaps not even foreseen at all.[193] Acknowledging intentional action would be a risky tactic for the accused, as it would considerably alleviate the prosecution's burden of demonstrating that the targeting was intentional. This *mens rea* issue is typically one of the most difficult elements to establish, particularly in shelling and bombardment cases.[194] Acknowledging that the attacks were purposefully directed against a non-military target, such as the natural environment, would also open up a clear path to prosecuting for the war crime of intentionally directing attacks against civilian objects under Article 8(2)(b)(iv) of the Rome Statute.[195]

Third, to the extent that reprisal attacks against the natural environment are strictly prohibited, this can be seen as effectively obviating the exacting "excessive" harm assessment of Article 8(2)(b)(iv).[196] The "excessive" harm assessment requires the weighing of the "damage to the natural environment" against the "concrete and direct overall military advantage anticipated". However, impermissible conduct, such as reprisals against the natural environment, cannot be included as part of the permissible military advantage for this test, as that would undermine the carefully crafted prohibitions set out under IHL. Similarly, the commander seeking to justify the military advantage sought could not argue that destroying cultural sites, or killing prisoners, could provide a concrete and direct military advantage; consequently, there is no permissible "military advantage" being sought. In the same way, if reprisal attacks against the natural environment are strictly prohibited, this would also be relevant to prosecutions based on Article 85(3)(b) and (c) of AP I, potentially in domestic criminal proceedings, as these provisions also refer to an "excessive" harm assessment.

On a similar basis, reprisals against the natural environment also cannot be countenanced as justifiable pursuant to military necessity. Reprisals are only

192 See above under the heading "Elements and etymology of belligerent reprisals".

193 See Adam Branch and Liana Minkova, "Ecocide, the Anthropocene, and the International Criminal Court", *Ethics and International Affairs*, Vol. 37, No. 1, 2023, pp. 53–54.

194 See, in the context of targeting civilians and civilian objects, ICTY, *Prosecutor v. Ante Gotovina and Mladen Markac*, Case No. IT-06–90-A, Judgment (Appeals Chamber), 16 November 2012, paras 24, 65–67, 83–84 (noting that "the touchstone of the Trial Chamber's analysis concerning the existence of a [joint criminal enterprise] was its conclusion that unlawful artillery attacks targeted civilians and civilian objects" and overturning the unlawful targeting and joint criminal enterprise findings).

195 See M. Drumbl, above note 60, pp. 321–322. See also Y. Dinstein, above note 24, para. 830 (Dinstein notes in relation to the disparity between the prohibitions on launching attacks against the natural environment in AP I and Article 8(2)(b)(iv) of the Rome Statute that "only a person acting with both knowledge and intent would have the necessary *mens rea* exposing him to penal sanctions").

196 Y. Dinstein, above note 24, para. 803, citing Carson Thomas, "Advancing the Legal Protection of the Environment in Relation to Armed Conflict: Protocol I's Threshold of Impermissible Environmental Damage and Alternatives", *Nordic Journal of International Law*, Vol. 83, No. 1, 2013. This excessive harm assessment must be differentiated from the proportionality assessment conducted to test whether an action constitutes a legitimate reprisal: Y. Dinstein, above note 24, para. 1053.

applicable to the natural environment if it is not being used for military purposes (if the environment were attacked because of its use as a military objective – for instance, if a cave complex were used as a weapons depot and military base – this would not be a reprisal, as it would not be an unlawful act under IHL, which is an inherent requirement to qualify as a reprisal).[197] This is significant for the IAC crime of extensive destruction and appropriation of property not justified by military necessity and carried out unlawfully and wantonly[198] and the NIAC crime of destroying or seizing the property of an adversary unless such destruction or seizure be imperatively demanded by the necessities of the conflict.[199]

A fourth way in which the reprisals scenario would impact criminal prosecution arises from the leadership requirement. As noted, a decision to launch reprisal attacks must be taken at the "highest political or military level".[200] This requirement, which equates to the leadership element of the crime of aggression,[201] is an important factor for harms such as aggression and environmental harm, which are primarily produced by policies and strategic decisions, rather than by individual actors at the foot soldier level.[202] It would satisfy the leadership clause which has been suggested for possible inclusion in a proposed definition of ecocide.[203] Additionally, this factor may be taken into account as weighing in favour of selecting a case according to the ICC Office of the Prosecutor's policy of focusing on those most responsible for crimes within the Court's remit.[204]

The requirement that authorizations for reprisals are given by the political or military leadership, as set out above,[205] will also assist when demonstrating the mental element required to prove criminal responsibility for environmental destruction. By specifically requiring authorization from the leadership, the framework of reprisals addresses situations in which decision-makers have been made aware of the nature of the targeted entity rather than situations in which the attack has been undertaken by errant soldiers acting outside of the chain of command. Although the mental element will still be contested in litigation, and the extent of the awareness of environmental impacts will depend on the facts of specific cases, this concentration of information in the hands of decision-makers will considerably advance efforts to establish that awareness in order to prove criminal responsibility of the members of the military or political leadership who order reprisal strikes on the environment.

197 See above under the heading "Elements and Etymology of Belligerent Reprisals".
198 Rome Statute, above note 59, Art. 8(2)(a)(iv).
199 *Ibid.*, Art. 8(2)(b)(xii).
200 ICTY, *Martić*, above note 65, para. 467.
201 Rome Statute, above note 59, Art. 8*bis*(1).
202 Matthew Gillett, "The Anatomy of an International Crime: Aggression at the International Criminal Court", *International Criminal Law Review*, Vol. 13, No. 4, 2013, p. 860.
203 M. Gillett, above note 13, pp. 326, 353.
204 ICC Office of the Prosecutor, above note 27, para. 43 (although the policy states that the "notion of the most responsible does not necessarily equate with the de jure hierarchical status", this has traditionally been a factor weighing in favour of proceeding with a case).
205 See above under the heading "Elements and Etymology of Belligerent Reprisals".

Although the preceding analysis has shown four ways in which reprisals can be relevant to prosecuting environmental harm under ICL, an interpretive issue arises in relation to the term "attack" in Article 55(2) of AP I.[206] Does this mean that harm to the environment through acts like deforestation, land clearing and animal species eradication would be excluded from Article 55(2) if these acts were not considered attacks? It is questionable whether these forms of ostensibly non-military harm would amount to attacks. Under Article 49(1), "attacks" are defined as "acts of violence against the adversary, whether in offence or in defence".[207] Concerning the conviction under Article 8(2)(e)(iv) against Al-Mahdi for the crime of "[i]ntentionally directing attacks against buildings dedicated to religion, education, art, science or charitable purposes, historic monuments, hospitals and places where the sick and wounded are collected, provided they are not military objectives", Bill Schabas has argued that

> the term "attack" [in the context of IHL] is not the word that would be used to describe the demolition or destruction of structures, using implements that are not weapons or military in nature, and where armed adversaries are not to be found within hundreds of kilometres.[208]

Similar objections may arise if the label of attacks on the natural environment is applied to non-military-type environmental harm, such as the dismantling of environmental protections like nuclear power plant or hydroelectric dam safety measures, as has reportedly been seen in the Ukraine context.[209] Whether such conduct may be considered an "attack" would be subject to dispute if litigated as a form of IHL-based crime against the environment. The issue further highlights that this potentially impactful area of law remains contentious and will necessitate close judicial attention in future legal proceedings, an endeavour which the present article seeks to assist.

Conclusions: Criminalizing reprisals as a means to avoid escalatory spirals of ecocentric and anthropocentric harm

The scenario of attacks in reprisal against the natural environment brings into sharp focus the divergences between IHL and ICL. Whereas such reprisals are categorically prohibited under Article 55(2) of AP I, that emphatic statement has not been carried through to the criminalization of this conduct. There is no grave breaches or war crimes provision explicitly outlawing reprisals against the natural environment. The lack of an explicit crime in this respect means that the IHL prohibition is

206 See Michael N. Schmitt, "Rewired Warfare: Rethinking the Law of Cyber Attack", *International Review of the Red Cross*, Vol. 96, No. 893, 2014, pp. 193–195.

207 See also *ibid.*, p. 194 (stating that "attacks" encompass "acts having violent consequences, in addition to those that are violent in the kinetic sense").

208 W. Schabas, above note 157, p. 78. See also the recent judgment of the ICC Appeals Chamber in the *Ntaganda* case, which also interpreted the term "attack" narrowly in the context of Article 8.

209 See above under the heading "Introduction".

addressed only to States and other belligerent parties, and lacks direct enforceability against individuals who order attacks on the environment as measures of reprisal.

Despite the lack of a direct criminal sanction, the preceding analysis demonstrates that scenarios involving purposeful reprisal attacks have considerable significance for the prosecution of environmental harm. In particular, this form of reprisals scenario opens up clear paths to prosecute environmental harm via other provisions under the Rome Statute (and potentially under other grave breaches in AP I and GC IV), it obviates the restrictive "excessive" damage test and military necessity test, and the leadership requirement may be a factor in case selection and in prosecuting environmental harm under a putative definition of ecocide should that be adopted before the ICC or any other criminal court. Moreover, asymmetry persists in relation to NIACs, in which there is no crime of attacking civilian objects *per se*; instead, the crime of destroying enemy property under Article 8(2)(e)(xii) of the Rome Statute is the most applicable alternative, but that creates several incongruities in relation to the natural environment.[210] The practical implications of these doctrinal points of analysis are important, as they address core obstacles to prosecuting environmental harm under ICL, and potentially provide a basis for reparations to be ordered, which could include environmental remediation.

Moreover, the analysis involves a significant reinterpretation of the normative framework governing conduct in armed conflict. By reconceptualizing reprisals from their traditionally anthropocentric grounding to a more ecocentric orientation, the approach herein departs from the conventional understanding that reprisals are a means of excusing accountability for violations of IHL (as a utilitarian means of seeking to end greater violations of IHL). In doing so, it provides a framework within which to realize the significant latent potential of reprisals to protect the environment. However, this "greening" of the normative basis of reprisals does not seek to undermine the core tenets of IHL and ICL, most importantly the protection of human life from unnecessary suffering and death. Rather, it seeks to ensure that the laudable shift in the conceptualization of IHL and ICL from a State-sovereignty-oriented approach to a human-centred approach (the principle of *hominum causa omne jus constitutum est* – all law is created for the benefit of human beings) progresses to recognizing the imperative value of protecting nature and human beings (in accordance with the emerging principle of *natura et hominum causa omne jus constitutum sunt* – all law is created for the benefit of human beings and the natural environment).[211]

These practical and normative considerations show that any element of reprisal inherent in an attack on the natural environment should be given close attention and thoroughly investigated. It should certainly not be shied away from due to a misplaced concern that reprisals against the natural environment are likely to be seen as justified under IHL. To the contrary, the tenor and detail of

210 See above under the heading "Rome Statute Provisions Indirectly Applicable to Ecocentric Reprisals". See also T. de La Bourdonnaye, above note 126, pp. 590–591.

211 See M. Gillett, above note 13, p. 354.

IHL provides a strong indication that the opposite would be true, particularly to the extent that an accused acknowledges the intentionality of an attack on the environment.

At the same time, the analysis shows that critical questions persist regarding the difference, if any, between a military "attack" on the environment, on the one hand, and harm to or destruction of the environment during an armed conflict, on the other, and the relevance of incidental harm to the environment arising from reprisal attacks. The imperative to address these questions is pressing.[212] There has been a discernible shift away from horizontal *ad hoc* enforcement of international law through unilateral State actions and towards the vertical enforcement of law according to commonly accepted red lines such as war crimes, crimes against humanity, genocide and aggression.[213] These efforts continue to cement reliance on atrocity crimes prosecutions rather than unilateral reprisals, and can reduce the core risk of reprisals – namely, the prospect of "escalatory spirals" that act to the detriment of the life and health of humans and the planet.[214]

212 Thilo Marauhn, "Environmental Damage in Times of Armed Conflict – Not 'Really' a Matter of Criminal Responsibility", *International Review of the Red Cross* Vol. 82, No. 840, 2000, p. 1036 ("[A]s long as ambiguities remain, environmental damage in times of armed conflict will not 'really' be a matter of criminal responsibility, and the general rule will remain deprived of the deterrent effect of criminal law provisions").

213 V. Bílková, above note 25, pp. 33–34; S.-E. Pantazopoulos, above note 28, p. 66.

214 See S. E. Nahlik, above note 22, p. 56.

International Review of the Red Cross (2023), **105** (924), 1497–1521.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000383

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Leveraging emerging technologies to enable environmental monitoring and accountability in conflict zones

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Abstract

The growth of access to the internet, wide availability of smart phones and increased public access to remote sensing data from hundreds of satellite systems have spurred a revolution in tracking the linkages between armed conflict and environmental damage. Over the last decade, a growing community of open-source investigative experts, environmentalists, academics and civil society groups have applied these methods to document war crimes, human rights violations and environmental degradation. These developments have created new opportunities for building accountability and transparency. The wealth of data on conflict-linked environmental damage has already been successfully leveraged to address acute and long-term environmental health risks and inform humanitarian response and post-conflict

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environmental assessments in Iraq, Syria and Ukraine. There are, however, larger questions on how to best make use of these data streams and information layers, and how to navigate the opportunities and limitations of these developments. This article will outline the new developments in this field and provide recommendations to ensure that data is used responsibly and effectively to strengthen accountability for environmental damages as a result of armed conflict.

Keywords: armed conflict, environment, remote sensing, machine learning, artificial intelligence.

Nature, an invisible victim of armed conflict

The often-used phrase describing the environment as a "silent victim" of armed conflict[1] holds true to the extent that the level of destruction of and consequences for public health and ecosystems have gone largely unnoticed. Despite the visually impactful events of the Gulf War oil fires in 1991, limited attention was given to the widespread environmental destruction and the impact on lives, livelihoods, ecosystems and climate. The lack of visibility of conflict-linked environmental degradation also prevented the political debates and policy responses needed to prevent, minimize and mitigate environmental impact and strengthen accountability for military conduct. The bulk of the work conducted on the environmental dimensions of armed conflict until the early 2010s was largely driven by either the United Nations Environment Programme (UNEP) through its post-conflict environmental assessment,[2] or by legal scholars discussing the challenges for international law in relation to the environmental impacts of armed conflict.[3] Within the humanitarian disarmament community, civil society efforts have been successful in banning or regulating certain weapons and their impacts on health and well-being. The environmental consequences of armed conflicts, however, have received limited attention, with exceptions around the use of depleted uranium (DU) in munitions[4] and initiatives around the health and environmental impacts of Agent Orange, used by the United States in Vietnam.[5]

The main hindrance to attracting attention to the topic and building a solid campaign was the absence of a clear overview that demonstrated the severity of conflict-linked environmental damage throughout the cycle of conflict and laid out how this directly impacts people's health, livelihoods and futures. By contrast, past humanitarian disarmament campaigns, such as those banning landmines and

1 David Jensen and Silja Halle, *Protecting the Environment during Armed Conflict: An Inventory and Analysis of International Law*, United Nations Environment Programme (UNEP), 2009.

2 Ken Conca and Jennifer Wallace, "Environment and Peacebuilding in War-torn Societies: Lessons from the UN Environment Programme's Experience with Post-Conflict Assessment", *Global Governance*, Vol. 15, No. 4, 2009, available at: www.jstor.org/stable/27800777 (all internet references were accessed in September 2023).

3 *Official Records of the General Assembly, Sixty-Sixth Session*, Supp. No. 10, UN Doc. A/66/10 and Add.1, 2011, para. 365.

4 See the International Coalition to Ban Uranium Weapons, available at: www.icbuw.eu/en/about-us/.

5 See the Vietnam Agent Orange Relief and Responsibility Campaign, available at: https://vn-agentorange.org.

cluster munitions or regulating the international arms trade, were able to build upon a wealth of visible impacts of weapons on people and their livelihoods that both helped raise international awareness of the humanitarian consequences while at the same time also functioning as an accountability instrument for the States using them. The causation between the weapon and its impact was fairly straightforward, which in turn benefited the international advocacy efforts.

Addressing the impacts of environmental damage on civilians, on the other hand, has proved more difficult, as demonstrating the relationship between exposure to toxic remnants of war, such as DU, and subsequent health impacts seems to be a Herculean task. This is due to the complexity around pre-existing environmental and health issues, mixed with the absence of relevant data to set up reliable scientific research that proves the causal link between illnesses and exposure to conflict-related pollution sources. Gaining access to military data on munitions use and the locations of such use, as well as on the targeting of specific objects that could result in the release of contaminants posing risks to civilians, has been a long-standing problem for humanitarian and civil society groups.[6] In the case of Iraq, for example, it took years of legal back-and-forth using freedom of information requests to the US and Dutch governments to get data on the coordinates of DU. This type of data is pivotal in the immediate aftermath of conflict to facilitate clean-up and remediation efforts, and would help to set up proper environmental health surveillance among possible exposed populations.

Having limited or no access to geographical data on conflict events, exposed populations, potential pollution sources, infrastructure damage and land use has posed serious challenges for campaigners and scholars alike in their work to improve understanding of the more complex direct and long-term impacts of conflict on the environment. As a result, the environment as a casualty of armed conflict has remained largely invisible among both States and global campaigners – at least until a decade ago, when increased worldwide access to the internet, combined with the rise of smartphone use, changed the global media landscape. This also brought conflict closer to home, putting the spotlight on developments where everyone could see what was happening directly on their smartphone. What promises did this technological turn of events bring for strengthening protection of the environment in armed conflicts, and for a stronger environment, peace and security agenda?

Armed conflict, data and the World Wide Web

A fundamental game-changer for researchers, journalists and civil society groups was the rapidly growing access to the internet and spread of smartphones that drastically changed the playing field. With access to the internet, people could post videos, photos and information on a myriad of online platforms, including a

6 PAX, *Laid to Waste: Depleted Uranium Contaminated Military Scrap in Iraq*, June 2014, available at: https://paxforpeace.nl/media/download/pax-rapport-iraq-final-lowres-spread.pdf.

growing amount of popular social media platforms such as Twitter, Facebook and YouTube, or share them among groups of people using applications such as Telegram and discussion boards like Reddit. When protests in Syria escalated into armed conflict, the use of social media to share information with the world as the events unfolded proved essential to grasping what was happening on the ground. Syria has been referred to as the most documented armed conflict in history,[7] as citizen and civil society organizations have gathered and shared information from social media sources to document potential wrongdoing[8] conducted by the warring parties.[9]

This gave rise to a new form of journalistic research: "open-source investigations" or "open-source intelligence", better known as OSINT. This strand of work was originally linked with government intelligence agencies using information sourced from traditional, publicly accessible media, but now refers to researchers' and journalists' use of the wealth of open-source information to document conflict-related events. The work by the Bellingcat investigative journalism collective, in particular, helped lead[10] the innovation of this strand of research by documenting potential war crimes and grave human rights violations in areas affected by armed conflict.[11] These new tools brought with them a gigantic amount of data that could be used to identify possible locations of war crimes, track down responsible individuals or groups and in general document conflict-linked damages in near-real time. Many traditional news outlets soon started their own open-source teams, often producing groundbreaking investigative pieces[12] mixing both OSINT and on-the-ground investigations to shed light on alleged grave human rights violations or outright war crimes. The International Criminal Court (ICC) even admitted OSINT as evidence for an arrest warrant against a Libyan militant commander whose actions were captured on film, which could be geolocated and confirmed, paving the way for more prosecutions based on open-source materials.[13]

7 Christina Roca, "How the Syrian War Changed How War Crimes Are Documented", *The New Humanitarian*, 1 June, 2017, available at: https://deeply.thenewhumanitarian.org/syria/articles/2017/06/01/long-read-how-the-syrian-war-changed-how-war-crimes-are-documented.

8 Jeff Deutch and Hadi Habal, "The Syrian Archive: A Methodological Case Study of Open-Source Investigation of State Crime Using Video Evidence from Social Media Platforms", *State Crime Journal*, Vol. 7, No. 1, 2018, available at: https://doi.org/10.13169/statecrime.7.1.0046.

9 Markus Rohde *et al.*, "Out of Syria: Mobile Media in Use at the Time of Civil War", *International Journal of Human–Computer Interaction*, Vol. 32, No. 7, 2016, available at: www.tandfonline.com/doi/full/10.1080/10447318.2016.1177300.

10 Nina C. Müller and Jenny Wiik, "From Gatekeeper to Gate-opener: Open-Source Spaces in Investigative Journalism", *Journalism Practice*, Vol. 17, No. 2, 2023, available at: https://doi.org/10.1080/17512786.2021.1919543.

11 Eliot Higgins, *We Are Bellingcat: An Intelligence Agency for the People*, Bloomsbury, London, 2021.

12 See, for example, the *New York Times* Visual Investigations team, available at: www.nytimes.com/spotlight/visual-investigations-award-winning; Mandal Chinula, "BBC Team Shares Insights behind Viral, Open-Source Investigation", *International Journalist Network*, 17 December 2018, available at: https://ijnet.org/en/story/bbc-team-shares-insights-behind-viral-open-source-investigation.

13 ICC, *Warrant of Arrest: The Prosecutor v. Mahmoud Mustafa Busayf Al-Werfalli*, ICC-01/11-02/17-2, 15 August 2017, available at: www.icc-cpi.int/court-record/icc-01/11-01/17-2.

These new approaches for using OSINT also found their way into the documentation of environmental crimes[14] and conflict-linked environmental degradation.[15] Existing risk assessment models for disasters, such as the Flash Environmental Assessment Tool,[16] were first used in combination with OSINT to identify areas at risk from conflict-related pollution in Syria[17] and to document the scale of environmental destruction in Iraq[18] and Ukraine,[19] both in 2017. This application soon became more common in assessments conducted by UN agencies[20] and humanitarian responders, building a better environmental situational awareness of a wide variety of risks in conflict-affected areas.

Despite these advantages, OSINT also comes with serious challenges, mainly driven by mis- and disinformation efforts. State and non-State actors, as well as ideologically driven online communities, have at times created and spread fake imagery and claims from conflict areas in disinformation campaigns, as a means to fuel uncertainty and doubt among the general public.[21] This trend demonstrates the necessity of having an additional verification layer to using information from social media networks. Though many expect that artificial intelligence (AI) will contribute to increased spread of mis- and disinformation, so far technology is able to quickly disprove fakes.[22] The main challenge is how to ensure a rapid awareness-raising response to the disproven fakes in order to counter disinformation campaigns.

Space-based environmental monitoring

The development of OSINT went hand in hand with the dramatic increase in both the availability of satellite imagery and the computational resources required to

14 Toby McIntosh, "Environmental Crime and Climate Change", in *Reporter's Guide to Investigating Organized Crime*, Global Investigative Journalism Network, 2023, available at: https://gijn.org/organized-crime-chapter-7-environmental-crimes/.

15 Wim Zwijnenburg and Eliot Higgins, "Online Identification of Conflict Related Environmental Damage", *Bellingcat*, 17 December 2015, available at: www.bellingcat.com/resources/how-tos/2015/12/17/online-identification-of-conflict-related-environmental-damage-a-beginners-guide/.

16 Leo Posthuma *et al.*, "The Flash Environmental Assessment Tool: Worldwide First Aid for Chemical Accidents, Response, Pro Action Prevention and Preparedness", *Environment International*, Vol. 72, November 2014, available at: https://doi.org/10.1016/j.envint.2014.04.018.

17 PAX, *Amidst the Debris: A Desktop Study on the Environmental and Public Health Impact of Syria's Conflict*, October 2015, available at: https://paxforpeace.nl/what-we-do/publications/amidst-the-debris.

18 PAX, *Living under a Black Sky: Conflict Pollution and Environmental Health Concerns in Iraq*, 5 December 2017, available at: https://paxforpeace.nl/what-we-do/publications/living-under-a-black-sky.

19 Wim Zwijnenburg, "Donbas: A Ticking Toxic Time Bomb", *Bellingcat*, 30 March 2017, available at: www.bellingcat.com/news/uk-and-europe/2017/03/30/donbas-ticking-toxic-time-bomb/.

20 UN Habitat, "Mosul Environmental Hazards Assessment", 15 May 2017, available at: http://unhabitatiraq.net/mosulportal/wp-content/uploads/2017/06/170515_Environmental-Hazards.pdf.

21 Richard Pendry, "New Technology, War, and Human Rights Reporting", in Stephen J. A. Ward (ed.), *Handbook of Global Media Ethics*, Springer, Cham, 2019, available at: https://link.springer.com/chapter/10.1007/978-3-319-32103-5_51.

22 Rahul Katarya and Mahboob Massoudi, *Recognizing Fake News in Social Media with Deep Learning: A Systematic Review*, Fourth International Conference on Computer, Communication and Signal Processing, Chennai, India, 2020, available at: https://ieeexplore.ieee.org/abstract/document/9315255.

derive insights therefrom. Open access satellite imagery is typically lower-resolution, including the European Space Agency's Sentinel-2 satellite (10m/pixel) and the US National Aeronautics and Space Administration (NASA) Landsat programme (30m/pixel). While these datasets are too coarse to identify individual objects, they can be used to monitor larger-scale phenomena such as oil spills, crop burning or deforestation.[23] High-resolution imagery from private companies such as Maxar, Airbus and Planet ranges from 30 to 50 centimetres per pixel. This type of imagery is rarely open access, but recently, high-resolution imagery has increasingly been available through Earth observation (EO) platforms such as Google Earth Pro which provide historic high-resolution imagery that can be instrumental for investigations. Many of these companies choose to release open data in response to natural disasters or similar events.

Even optical satellites with a very low spatial resolution can provide important information on conflict-induced environmental degradation. The Moderate Resolution Imaging Spectroradiometer (MODIS) has a spatial resolution of 1 kilometre per pixel, making it impossible to identify distinct features such as buildings or trees, yet what it lacks in spatial resolution it makes up for in spectral and temporal resolution – MODIS can image the entire planet every one to two days and can even automatically detect thermal anomalies from space.[24] NASA's Fire Information for Resource Management System provides daily data on active fires in near-real time, and has historic data going back to the year 2000. These detections can be used to track fires caused by fighting. Beyond estimating the scale and environmental toll of areas burned by fighting, such fire detections can also serve to verify the timing and locations of individual attacks, increasing public accountability. The Operational Linescan System, part of the US Defense Meteorological Satellite Program, is now also widely used to detect night-time lights, or the absence thereof; this could help determine to what extent access to energy has been cut off by damage to energy infrastructure.[25]

Spectrometer instruments can also be used to track air pollution caused by conflict events. The Copernicus Atmosphere Monitoring Service (CAMS) combines data from a range of different sensors, including the Sentinel-5p satellite, to provide atmospheric data at a spatial resolution of 45 km on an hourly basis. One application of CAMS data, for example, showed a sulphur dioxide plume resulting from an attack on the Al-Mishraq Sulphur Plant in Iraq,[26] a plant used

23 Wim Zwijnenburg, "Environmental Monitoring of Conflicts Using Sentinel-2 Data", *Sentinel Hub Blog*, 29 January 2019, available at: https://medium.com/sentinel-hub/environmental-monitoring-of-conflicts-using-sentinel-2-61f07d76e27b.

24 Vincent Salomonson, William Barnes and Edward Masuoka, "Introduction to MODIS and an Overview of Associated Activities", in John Qu, Wei Gao, Menas Kafatos, Robert Murphy and Vincent Salomonson (eds), *Earth Science Satellite Remote Sensing*, Springer, Berlin and Heidelberg, 2006, available at: https://doi.org/10.1007/978-3-540-37293-6_2.

25 Xi Li, Fengrui Chen and Xiaoling Chen, "Satellite-Observed Nighttime Light Variation as Evidence for Global Armed Conflicts", *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, Vol. 6, No. 5, 2013, available at: https://ieeexplore.ieee.org/document/6502753/.

26 Ollie Ballinger and Wim Zwijnenburg, "What Oil Satellite Technology and Iraq can Tell Us about Pollution", *Bellingcat*, 14 April 2021, available at: www.bellingcat.com/resources/2021/04/15/what-oil-satellite-technology-and-iraq-can-tell-us-about-pollution.

to produce sulphuric acid for use in fertilizers and pesticides. The attack destroyed the plant, causing a fire which burned for a month and released 21 kilotons of sulphur dioxide into the atmosphere per day – the largest human-made release of sulphur dioxide in history.[27] Beyond assessing the extent of a single event such as the Al-Mishraq fire, spectrometers measuring atmospheric gasses can also help to quantify routine exposure to hazardous levels of various pollutants such as nitrogen dioxide. Though air pollution can be measured using ground sensors, these are rare in conflict-affected areas.

While optical sensors and spectrometers rely on reflected sunlight in order to image, synthetic aperture radar (SAR) imagery is a type of remote sensing that uses radio waves to detect objects on the ground. These active sensors generate their own illumination and are able to produce imagery through cloud cover and even at night. SAR imagery has played an important role in environmental monitoring.[28] For example, because oil creates a slick surface and thus alters the way in which radio waves are reflected off of water, radar imagery has been used extensively to detect oil spills, including in conflict-affected areas.[29] More recently, SAR has also been applied to obtain rough estimates for urban damage assessments.[30]

Application of remote sensing in armed conflicts

Remote sensing data has proven to be particularly helpful for tracking conflict-linked damage in numerous conflicts.[31] A wealth of academic research has illustrated the utility of remote sensing as an essential instrument that helps reveal the scale of land cover impacts linked with conflict, such as deforestation driven by fuel needs from the armed conflict in Syria,[32] forest cover changes associated with peace negotiations in Colombia,[33] and forest conservation in

27 Oscar Björnham *et al.*, "The 2016 Al-Mishraq Sulphur Plant Fire: Source and Health Risk Area Estimation", *Atmospheric Environment*, Vol. 169, 2017, available at: https://doi.org/10.1016/j.atmosenv.2017.09.025.

28 Hamid Jafarzadeh *et al.*, "Oil Spill Detection from Synthetic Aperture Radar Earth Observations: A Meta-Analysis and Comprehensive Review", *GIScience and Remote Sensing*, Vol. 58, No. 7, 2021, available at: www.tandfonline.com/doi/full/10.1080/15481603.2021.1952542.

29 Kotsewararao Vankayalapati *et al.*, "Multi-Mission Satellite Detection and Tracking of October 2019 Sabiti Oil Spill in the Red Sea", *Remote Sensing*, Vol. 15, No. 38, 2023, available at: https://doi.org/10.3390/rs15010038.

30 Amit Kumar, *et al.*, "Analyzing Urban Damage and Surface Deformation Based Hazard-Risk in Kathmandu City Occurred During Nepal Earthquake (2015) Using SAR Interferometry", *Advances in Space Research*, Vol. 70, No. 12, 2022, available at: https://doi.org/10.1016/j.asr.2022.02.003.

31 Fernando Arturo Mendez and István Valánszki, "Environmental Armed Conflict Assessment Using Satellite Imagery", *Journal of Environmental Geography*, Vol. 13, No. 3–4, 2021, available at: https://doi.org/10.2478/jengeo-2020-0007.

32 Mohammed Ali Mohamed, "An Assessment of Forest Cover Change and Its Driving Forces in the Syrian Coastal Region during a Period of Conflict, 2010 to 2020", *Land*, Vol. 10, No. 2, 2021, available at: https://doi.org/10.3390/land10020191.

33 Oscar Bautista-Cespedes *et al.*, "The Effects of Armed Conflict on Forest Cover Changes across Temporal and Spatial Scales in the Colombian Amazon", *Regional Environmental Change*, Vol. 21, 2021, available at: https://doi.org/10.1007/s10113-021-01770-6.

Rwanda.[34] Other research has focused on agriculture, demonstrating changes in agricultural land use in Syria,[35] increased yields from crops that may fund armed groups in Iraq,[36] and food insecurity caused by conflict-driven land abandonment in South Sudan.[37] There is also growing interest in using geographic information systems (GIS) to quantify air pollution from conflict-linked sources[38] and to map nature reserves and protected sites at risk from armed conflicts.[39] The ongoing Russia–Ukraine armed conflict has witnessed a surge in interest in GIS-based analysis that is yielding interesting results. A US-based consortium of universities and government agencies has set up the Conflict Observatory, providing a wide-ranging assessment of conflict impact, including on agriculture[40] and food security.[41] Both international and Ukrainian civil society groups have combined open-source data with EO to document the environmental dimensions of the conflict, focusing on energy infrastructure,[42] water infrastructure,[43] deforestation[44] or providing public databases with reported incidents with potential environmental consequences.[45]

Over the last decade, civil society groups and humanitarian organizations have also addressed the use of explosive weapons in populated areas,[46] ultimately

34 Elsa M. Ordway, "Political Shifts and Changing Forests: Effects of Armed Conflict on Forest Conservation in Rwanda", *Global Ecology and Conservation*, Vol. 3, 2015, available at: https://doi.org/10.1016/j.gecco.2015.01.013.

35 Khaled Hazaymeh *et al.*, "A Remote Sensing-Based Analysis of the Impact of Syrian Crisis on Agricultural Land Abandonment in Yarmouk River Basin", *Sensors*, Vol. 22, No. 10, 2022, available at: https://doi.org/10.3390/s22103931.

36 Hadi H. Jaafar and Eckart Woertz, "Agriculture as a Funding Source of ISIS: A GIS and Remote Sensing Analysis", *Food Policy*, Vol. 64, 2016, available at: https://doi.org/10.1016/j.foodpol.2016.09.002.

37 Victor Mackenhauer *et al.*, "The Impact of Conflict-Driven Cropland Abandonment on Food Insecurity in South Sudan Revealed Using Satellite Remote Sensing", *Nature Food*, Vol. 2 No. 12, 2021, available at: https://doi.org/10.1038/s43016-021-00417-3.

38 Alexandru Mereuţă *et al.*, "A Novel Method of Identifying and Analysing Oil Smoke Plumes Based on MODIS and CALIPSO Satellite Data", *Atmospheric Chemistry and Physics*, Vol. 22, No. 7, 2022, available at: https://doi.org/10.5194/acp-22-5071-2022.

39 Noam Levin, Saleem Ali, David Crandall and Salit Kark, "World Heritage in Danger: Big Data and Remote Sensing can Help Protect Sites in Conflict Zones", *Global Environmental Change*, Vol. 55, 2019, available at: https://doi.org/10.1016/j.gloenvcha.2019.02.001.

40 Megan Zaroda, "NASA Harvest Tracks Frontline Agriculture Patterns with Planet's Satellite Data", *Planet*, 5 September 2022, available at: www.planet.com/pulse/nasa-harvest-tracks-frontline-agriculture-patterns-with-planets-satellite-data/.

41 Kaveh Khoshnood *et al.*, *Ukraine's Crop Storage Infrastructure: Post-Invasion Damage Assessment*, Humanitarian Research Lab at Yale School of Public Health and Oak Ridge National Laboratory, 15 September 2022, available at: https://hub.conflictobservatory.org/portal/sharing/rest/content/items/67cc4b8ff2124d3bbd5b8ec2bdaece4f/data.

42 PAX, *Risks and Impacts from Attacks on Energy Infrastructure. Environment and Conflict Alert Ukraine*, 2022, available at: https://paxforpeace.nl/what-we-do/publications/risks-and-impacts-from-attacks-on-energy-infrastructure-in-ukraine.

43 Oleksandra Shumilova *et al.*, "Impact of the Russia–Ukraine Armed Conflict on Water Resources and Water Infrastructure", *Nature Sustainability*, Vol. 6, No. 5, 2023, available at: https://doi.org/10.1038/s41893-023-01068-x.

44 World Wildlife Foundation, "High Conservation Values Matter in Wartime in Ukraine", 29 December 2022, available at: www.wwfmmi.org/?8541441/high-conservation-values.

45 ZoI Environment Network, "Ecodozor Platform for Monitoring War-Related Environmental Damage and Risks in Ukraine", 2023, available at: https://zoinet.org/product/ecodozor/.

46 International Committee of the Red Cross (ICRC), *Explosive Weapons With Wide Area Effects: A Deadly Choice in Populated Areas*, Geneva, January 2022, available at: www.icrc.org/en/document/civilians-protected-against-explosive-weapons.

resulting in a broadly supported political declaration.[47] The intense damage caused by these weapons in urban areas poses additional risks to civilians from, among other things, environmental harm.[48] Remote sensing combined with OSINT is already being used for rapid damage assessments in Iraq,[49] Gaza[50] and Ukraine,[51] which in turn are helping to identify hazardous sites in urban areas and quantify the debris and rubble, often mixed with hazardous materials.

Democratization of environmental research

Prior to the smartphone and EO data boom, most of the environmental assessment work carried out by UN agencies was done post-conflict, often years after the wars had ended, and was thus limited in types of locations and data on conflict impacts. In addition, this type of expert analysis was largely conducted by specialized agencies with trained experts. The revolution in environmental data collection analysis has meant that affected communities, campaigners and academics have direct access to specific information that can spur international campaigning to improve the protection of the environment. Several key multilateral processes and initiatives by international organizations to improve this protection were driven by the growing body of evidence that demonstrated the many layers of conflict-linked environmental degradation.

Since 2013, the International Law Commission (ILC) has been working to review existing legal avenues on the protection of the environment in relation to armed conflicts (PERAC), as legal principles need to be kept in line with modern developments and new insights. Over the course of nearly a decade, States met to discuss various draft principles put forward by the Special Rapporteurs leading this process. Though the process was unfortunately limited in nature in terms of civil society participation, NGOs and experts did have the opportunity to brief States in a number of public consultations on specific issues linked with conflict that helped underscore the importance of developing progressive international law. The final set of PERAC Principles was adopted by the ILC and was welcomed in late 2022 at the UN General Assembly in a resolution that "brings [the Principles] to the attention of States, international organizations and all who

47 See the article by Simon Bagshaw in this issue of the *Review*.

48 PAX, "Exploring Environmental Harm from Explosive Weapons in Populated Areas", May 2020, available at: https://paxforpeace.nl/news/blogs/exploring-environmental-harm-from-explosive-weapons-in-populated-areas.

49 UNEP, "Environmental Issues in Areas Retaken from ISIL Mosul, Iraq – Technical Note", Geneva, 2017, available at: www.unep.org/resources/publication/environmental-issues-areas-retaken-isil-mosul-iraq-technical-note.

50 PAX, "Gaza: Preliminary Urban and Environmental Impacts", Environment and Conflict Alert No. 3, May 2021, available at: https://paxforpeace.nl/what-we-do/publications/environment-and-conflict-alert-gaza.

51 Yusupujiang Aimaiti *et al.*, "War Related Building Damage Assessment in Kyiv, Ukraine, Using Sentinel-1 Radar and Sentinel-2 Optical Images", *Remote Sensing*, Vol. 14, No. 24, 2022, available at: https://doi.org/10.3390/rs14246239.

may be called upon to deal with the subject, and encourages their widest possible dissemination".[52]

On a practical level, the wealth of research further spurred attention on the topic. The dark visual imagery of the 2016–17 oil fires at Qayyarah in Iraq, blackening the skies for months, combined with ongoing research, proved to be instrumental[53] for cementing support in getting a strong UN Environment Assembly (UNEA) resolution on conflict pollution in 2017, led by Iraq.[54] From a human rights perspective, a better understanding of civilians' exposure from toxic remnants of war based on civil society input was further reflected in debates at the UN Human Rights Council, where UN Special Rapporteurs included concerns over children's exposure to hazardous war remnants[55] and the broader need for information on communities affected by conflict pollution.[56]

The linkages between environment and security gained further traction in the UN Security Council's work, where in particular better documentation of environmental harm[57] and links with detrimental public health impacts were reflected in the UN Secretary-General's report on the protection of civilians since 2019,[58] helped by further attention given during Arria-Formula meetings[59] and specific country discussions on the environment–security nexus.[60]

The picture that emerges from these technological developments and multilateral discussions outlines the importance of evidence-based advocacy. Furthermore, the innovative use of these developments can create meaningful change that builds momentum toward improving protection of the environment, people and the planet. Yet the future holds more potential, and the pace of

52 UN General Assembly, *Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.5/L.968, 20 May 2022, available at: https://legal.un.org/docs/?symbol=A/CN.4/L.968.

53 PAX, "Iraqis Fear Conflict Pollution Will Not Be Cleaned Up", 5 December 2017, available at:: https://paxforpeace.nl/news/overview/iraqis-fear-conflict-pollution-will-not-be-cleaned-up.

54 UNEA Res. 3/1, "Pollution Mitigation and Control in Areas affected by Armed Conflict or Terrorism", 30 January 2018, available at: https://wedocs.unep.org/handle/20.500.11822/30792.

55 Human Rights Council, *Report of the Special Rapporteur on the Implications for Human Rights of the Environmentally Sound Management and Disposal of Hazardous Substances and Wastes*, UN Doc. A/HR/33/41, 2 August 2016, available at: www.ohchr.org/en/calls-for-input/report-rights-child-and-hazardous-substances-and-wastes.

56 Human Rights Council, *Report of the Special Rapporteur on the Implications for Human Rights of the Environmentally Sound Management and Disposal of Hazardous Substances and Wastes*, UN Doc. A/HRC/36/41, 20 July 2017, available at: https://documents-dds-ny.un.org/doc/UNDOC/GEN/G17/218/43/PDF/G1721843.pdf?OpenElement.

57 PAX, "Protecting the Environment Is Protecting Civilians: The Humanitarian Dimensions of the Environment, Peace and Security Agenda", UN Security Council Side-Event Summary, 2021, available at: https://protectionofcivilians.org/wp-content/uploads/2021/06/Event-Summary-PERAC-is-PoC-Humanitarian-Dimensions-of-EPS-1.pdf.

58 UN Security Council, *Protection of Civilians in Armed Conflict: Report of the Secretary-General*, UN Doc. A/2022/281, 10 May 2022, available at: https://reliefweb.int/report/world/report-secretary-general-protection-civilians-armed-conflict-s2022381-enarruzhfr.

59 UN Security Council, *Arria-Formula Meeting on the Protection of the Environment during Armed Conflict*, 8 December 2019, available at: www.securitycouncilreport.org/whatsinblue/2019/12/arria-formula-meeting-on-the-protection-of-the-environment-during-armed-conflict.php.

60 UN Convention to Combat Desertification, "Briefing UN Security Council on Humanitarian Effects of Environmental Degradation on Peace and Security", 17 September 2020, available at: www.unccd.int/news-stories/statements/briefing-un-security-council-humanitarian-effects-environmental-degradation.

technological change is rapidly increasing. With the rise of computer algorithms, how can researchers, humanitarians and campaigners make full use of this digital potential?

The future of conflict-linked environmental analysis

Current developments and future opportunities in analytical capabilities can be understood by exploring the application of modelling, machine learning (ML) and AI in environmental data analysis in conflict-affected areas. These include the proliferation of no-code remote sensing platforms, open-source software packages and free cloud computing services, all three of which significantly reduce barriers to public and professional monitoring and analysis of conflict-linked pollution, deforestation, water security, urban damage assessment and broader patterns of environmental harm that can be linked with military operations, along with the consequences for civilians, biodiversity and livelihoods.[61]

Big data, machine learning and artificial intelligence

The increasing quantity and quality of satellite imagery has been met with a commensurate increase in computing power, enabling insights that were previously unfeasible. Moore's law –the observation that the performance of integrated circuits increases exponentially over time – is particularly relevant to the field of open-source remote sensing.[62] In the past ten years, many models of laptops have seen the number of central processing units increase more than sixfold. Graphics processing units, once a rarity, are becoming increasingly common in consumer electronics. The growth in computational power has considerably lowered the barrier to entry for the analysis of satellite imagery, previously limited to well-resourced organizations, and it is now possible to perform complex analyses on the average laptop. Beyond the planetary computers discussed below, there is also a growth of no-code platforms for visualization of satellite imagery.

Yet an even more significant development in the area of computing has been the growth in cloud computing platforms for the analysis of satellite imagery, particularly since 2016. These can be roughly divided into two categories: no-code platforms for the visualization of satellite imagery, and planetary computers capable of analysis at a global scale.

61 Gordana Kaplan *et al.*, "Monitoring War-Generated Environmental Security using Remote Sensing: A Review", *Land Degradation and Development*, Vol. 33 No. 10, 2022, available at: https://doi.org/10.1002/ldr.4249.

62 Charles Leiserson *et al.*, "There's Plenty of Room at the Top: What will Drive Computer Performance after Moore's Law?", *Science*, Vol. 368, No. 6495, 2020, available at: www.science.org/doi/10.1126/science.aam9744.

No-code platforms

Sentinel Hub is an online platform that allows users to access satellite imagery collected by the European Space Agency's satellites, NASA's Landsat and MODIS satellites, and other providers. Users can display imagery from different dates and perform basic image processing and analysis with a graphical user interface. Similarly, NASA's Worldview platform aggregates data from a wide variety of EO systems and allows them to be easily accessed with an intuitive interface.[63] These platforms have enabled anyone with an internet connection to load medium-resolution imagery of virtually anywhere on Earth in near-real time, without the need for technical skills or computing resources. Though advanced analysis is not possible on these platforms, simply visualizing multi-temporal satellite imagery enables monitoring of infrastructural damage, deforestation, pollution and a variety of other conflict-induced threats to the environment.

This can be explained by using the example of rare-earth mining in Myanmar, a toxic practice that is severely polluting the environment.[64] Sentinel Hub can be used to deliver insights on the proliferation of mines. Because these mines have precipitation pools filled with water, the location of such pools can be used to identify mines. Figure 1 visualizes a Normalized Difference Water Index (NDWI) calculation applied to a Sentinel-2 image, a simple process that highlights water in a scene and that can be applied with one click. Clicking on a point on the map visualizes the NDWI value at a given location over time.

The graph in Figure 1 shows negative NDWI values for all of 2021, followed by a steep increase in August 2022, after which persistently high NDWI values are recorded. Sentinel Hub allows virtually anyone to verify the construction date of an unregulated mine in Myanmar, with just a few clicks.

Planetary computers

As geospatial datasets – particularly satellite imagery collections – increase in size, researchers are increasingly relying on cloud computing platforms such as Google Earth Engine (GEE) or the Microsoft Planetary Computer to analyze vast quantities of data. GEE is free for individuals and academic researchers and allows users to write open-source code that can be run by others in one click, thereby yielding fully reproducible results. These features have put GEE on the cutting edge of scientific research. Figure 2 visualizes the number of journal articles produced using different geospatial analysis software platforms.

Despite only being released in 2015, the number of geospatial journal articles produced using GEE (shown in red in Figure 2) has outpaced every other major geospatial analysis software, including ArcGIS, Python and R, in just five

63 Patrick Merritt *et al.*, "Big Earth Data: A Comprehensive Analysis of Visualization Analytics Issues", *Big Earth Data*, Vol. 2, No. 4, 2019, available at: https://doi.org/10.1080/20964471.2019.1576260.

64 Global Witness, "Myanmar's Poisoned Mountains. The Toxic Rare Earth Mining Industry at the Heart of the Global Green Energy Transition", 2022, available at: www.globalwitness.org/en/campaigns/natural-resource-governance/myanmars-poisoned-mountains/.

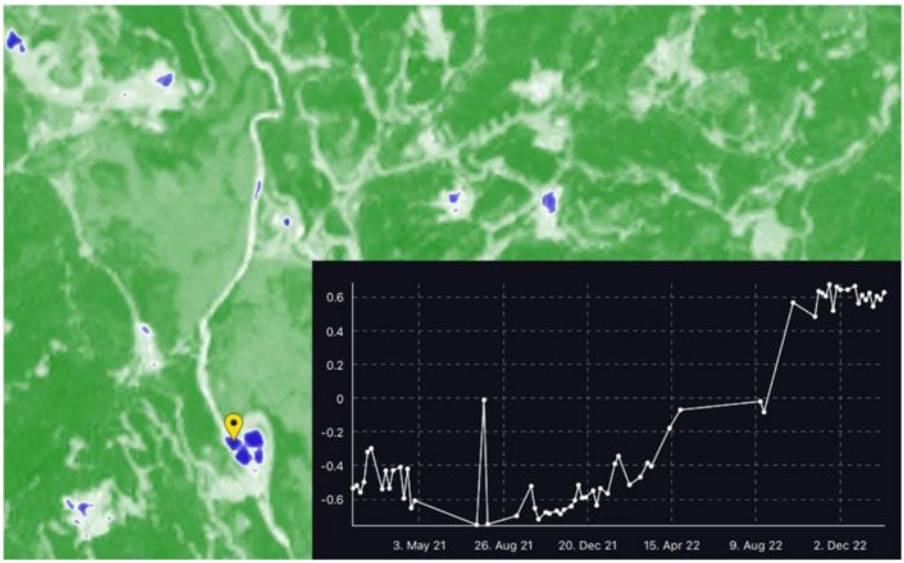

Figure 1. NDWI applied to Sentinel-2 imagery over time. Source: Copernicus Sentinel Hub, authors' calculation.

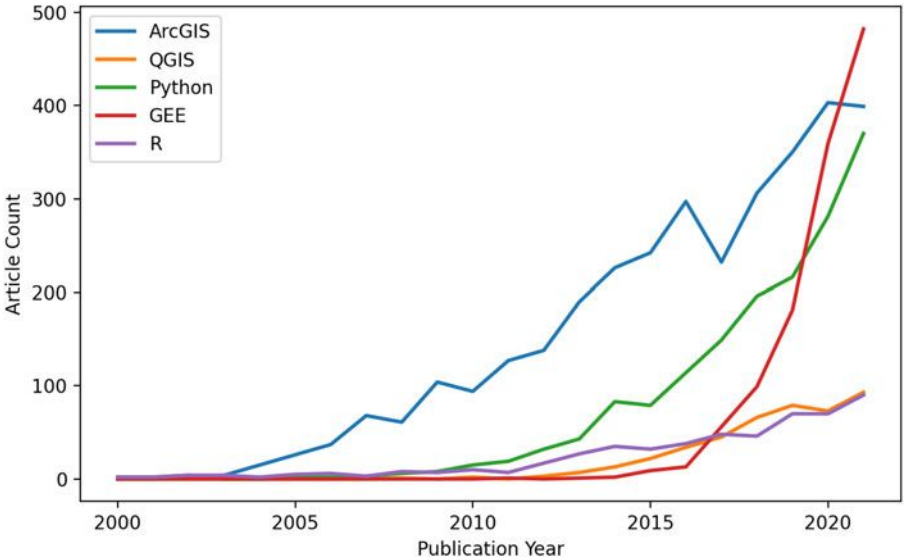

Figure 2. Number of journal articles using different geospatial analysis software. Source: Web of Science, authors' calculation.

years. By storing and running computations on Google servers, GEE is far more accessible to those who do not have significant local storage or computational resources.

Optical satellite imagery can be combined with ML to deliver insights on conflict-induced pollution that would otherwise be unfeasible. Natural resource extraction often plays a role in conflict, as it offers a source of revenue for belligerents. Beyond fuelling armed conflict, such activity often has catastrophic consequences for the environment. Knowing the locations of these extraction sites is a prerequisite for their eventual clean-up, but active fighting can preclude the conduct of field surveys.

One example of conflict-related resource extraction involves the above-mentioned case of rare-earth mining in Myanmar, which takes place in mountainous areas of the country's northeast. The processes used to extract heavy rare earths are highly polluting, ravaging landscapes and poisoning waterways. Figure 3 shows the location of over 2,700 such mines, identified manually by Global Witness.

The inset satellite image in Figure 3 shows a close-up of one mine; bright blue "precipitation pools" – used to precipitate out minerals from a slurry of ammonium sulphate and mud – are a characteristic feature of such mines. Runoff from these pools leeches directly into the N'Mai Kha River, which runs the length of Myanmar and whose basin is home to two thirds of the country's population. By some estimates, the pollution caused by chemicals seeping into water bodies could take up to a century to clean up.

Using the labelled locations of pools as a training dataset, a convolutional neural network (CNN) can be used to automate the detection of pools beyond the study area, or in new imagery as it becomes available. Figure 4 shows the results of inference conducted by an object detection model using different source imagery to that which it was originally trained on.

High-resolution optical satellite imagery and AI can thus be used to precisely identify the locations of highly polluting mines in an active war zone. This general approach is not confined to a particular geography and generalizes well to other contexts.

Machine learning and artificial intelligence

Within the humanitarian response community, there is growing interest in applications to improve analysis and response using ML. For example, ML is already being used to quickly identify informal settlements, conduct flood analysis and track flows of displaced persons.[65] Promising improvements use deep-learning (DL) models, often applied for land classification; examples of DL

65 John Quinn *et al.*, "Humanitarian Applications of Machine Learning with Remote-Sensing Data: Review and Case Study in Refugee Settlement Mapping", *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, Vol. 376, No. 2128, 2018, available at: http://doi.org/10.1098/rsta.2017.0363.

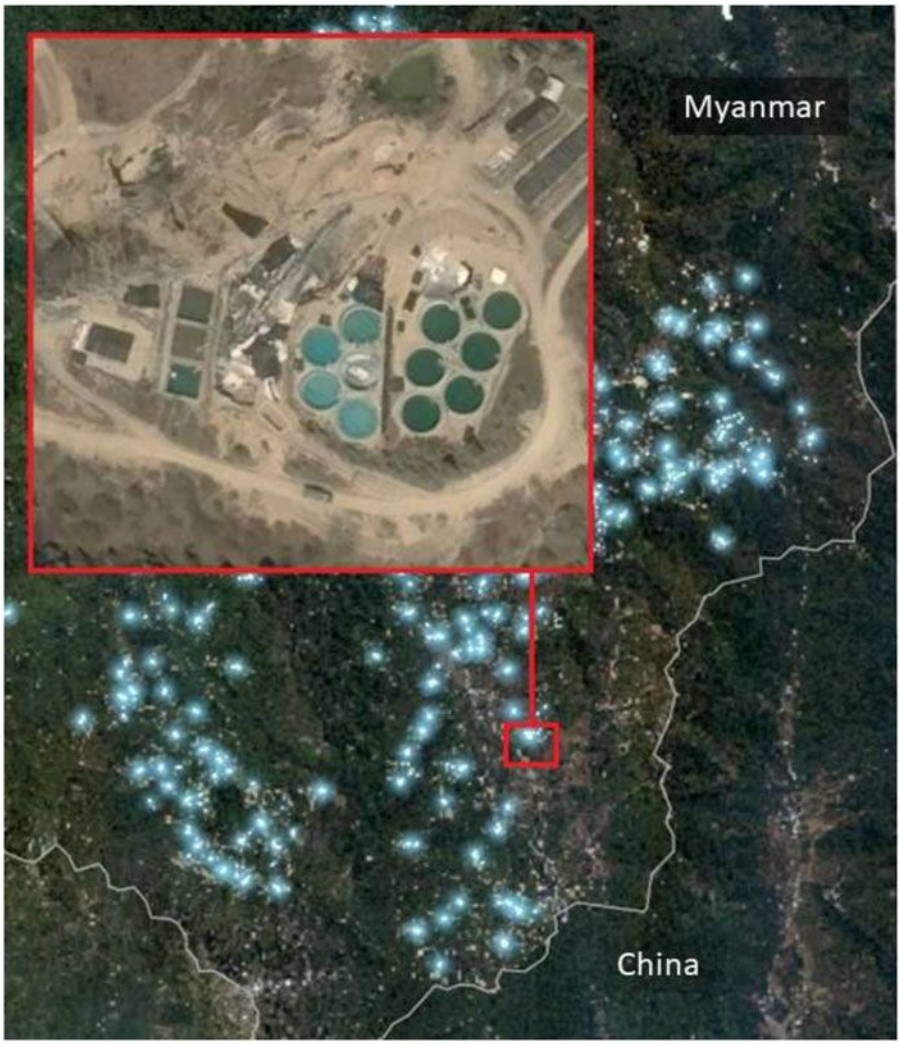

Figure 3. Satellite image showing locations of rare-earth mines in Myanmar. Source: Global Witness, with inset from Google Maps Basemap.

application in conflict areas will be outlined below. Researchers have tried various specialized DL models to identify oil spills and vegetation changes,[66] and the application of AI is gaining popularity in the field of remote sensing.[67] In

66 Ying-Nong Chen *et al.*, "Special Issue Review: Artificial Intelligence and Machine Learning Applications in Remote Sensing", *Remote Sensing*, Vol. 15, No. 3, 2023, available at: https://doi.org/10.3390/Rs15030569.

67 Yonghao Xu *et al.*, "AI Security for Geoscience and Remote Sensing: Challenges and Future Trends", *IEEE GeoScience and Remote Sensing Magazine*, Vol. 11, No. 2, 2023, available at: https://arxiv.org/pdf/2212.09360.pdf.

Figure 4. Computer vision model trained to identify rare-earth mining pools. Source: Authors' analysis of Mapbox Basemap imagery.

conflict-affected areas, there have been attempts to apply AI to the detection of unexploded ordnance, using images taken by small drones; such initiatives can support swift remediation and land clearance efforts.[68]

As discussed above, natural resource extraction often plays a role in conflict – despite its potentially catastrophic consequences for the environment – as it offers a source of revenue for belligerents. One example of this is the proliferation of makeshift refineries in northern Syria during the civil war. The destruction of Syria's oil infrastructure and the importance of oil as a source of revenue for armed groups has led to a rise in makeshift oil extraction and refining. These makeshift refineries are often constructed by digging a large pit, lining it

68 Seungwan Cho, Jungmok Ma and Oleg A. Yakimenko, "Aerial Multi-Spectral AI-based Detection System for Unexploded Ordnance", *Defence Technology*, 2022, available at: https://doi.org/10.1016/j.dt.2022.12.002.

Table 1. *Review of tasks applying AI to satellite imagery*

Task types	AI techniques	Data
Low-level vision tasks		
Pan-sharpening	GAN	WorldView-2 and GF-2 images
Denoising	LRR	HYDICE and AVIRIS data
Cloud removal	CNN	Sentinel-1 and Sentinel-2 data
Destriping	CNN	EO-1 Hyperion and HJ-1A images
High-level vision tasks		
Scene classification	CNN	Google Earth images
Object detection	CNN	Google Earth images, GF-2, and JL-1 images
Land use and land cover mapping	FCN	Airborne hyperspectral/ VHR color image/LiDAR data
Change detection	SN and RNN	GF-2 images
Video tracking	SN and GMM	VHR satellite videos
Natural language processing-related tasks		
Image captioning	RNN	VHR satellite images with text descriptions
Text-to-image generation	MHN	VHR satellite images with text descriptions
Visual question answering	CNN and RNN	Satellite/aerial images with visual questions/answers
Environment monitoring tasks		
Wildfire detection	FCN	Sentinel-1, Sentinel-2, Sentinel-3 and MODIS data
Landslide detection	FCN and Transformer	Sentinel-2 and ALOS PALSAR data
Weather forecasting	CNN and LSTM	SEVIRI data

Continued

Table 1.
Continued

Task types	AI techniques	Data
Air quality prediction	ANN	MODIS data
Poverty estimation	CNN	VHR satellite images
Refugee camps detection	CNN	WorldView-2 and WorldView-3 data

Acronyms used in "AI Techniques" column: artificial neural network (ANN); convolutional neural network (CNN); fully convolutional network (FCN); generative adversarial network (GAN); Gaussian mixture model (GMM); low-rank representation (LRR); long short-term memory network (LSTM); modern Hopfield network (MHN); recurrent neural network (RNN); Siamese network (SN).
Source: Yonghao Xu *et al.*, "AI Security for Geoscience and Remote Sensing: Challenges and Future Trends", *IEEE GeoScience and Remote Sensing Magazine*, Vol. 11, No. 2, 2023, available at: https://arxiv.org/pdf/2212.09360.pdf.

with tarpaulin and filling it with polluted water. A furnace heats crude oil, which is run through a pipe cooled by the basin and collected in drums. These refineries also frequently leak, blackening large swaths of land around them.[69]

Previous efforts to quantify informal oil production have involved manually sifting through satellite imagery and counting the makeshift refineries. This is a painstaking process that leaves a number of important questions unanswered. Even if one were to count all of the individual refineries, could we get an estimate of the polluted area? What if we wanted to count the refineries in a new part of Syria, or get annual or even monthly estimates of new refineries?

Using a combination of optical and radar imagery (Sentinel-1 and Sentinel-2) and a handful of known locations of such refineries, an AI model can be trained to identify areas contaminated by oil. The process of identifying refineries and oil spills can thus be automated across an area of thousands of square kilometres, and updated as new imagery becomes available.

Figure 5 shows the locations of model predictions for oil contamination. Photographs taken on the ground of several makeshift refineries are used to ground-truth model predictions. The model identifies areas with a high density of such facilities, giving precise estimates of their spatial distribution. Planetary computers are also often used to facilitate the dissemination of findings by allowing users to create and share interactive applications. For example, the present authors have created a dedicated link[70] which directs to an application visualizing the results of the ML-based identification of makeshift refineries in northern Syria mentioned above. The application allows users to draw a rectangle on the map,

69 PAX, *Scorched Earth and Charred Lives. Human Health and Environmental Risks of Civilian-Operated Makeshift Oil Refineries in Syria*, 5 September 2016, available at: https://paxforpeace.nl/what-we-do/publications/scorched-earth-and-charred-lives.

70 Available at: https://ollielballinger.users.earthengine.app/view/rojavaoil.

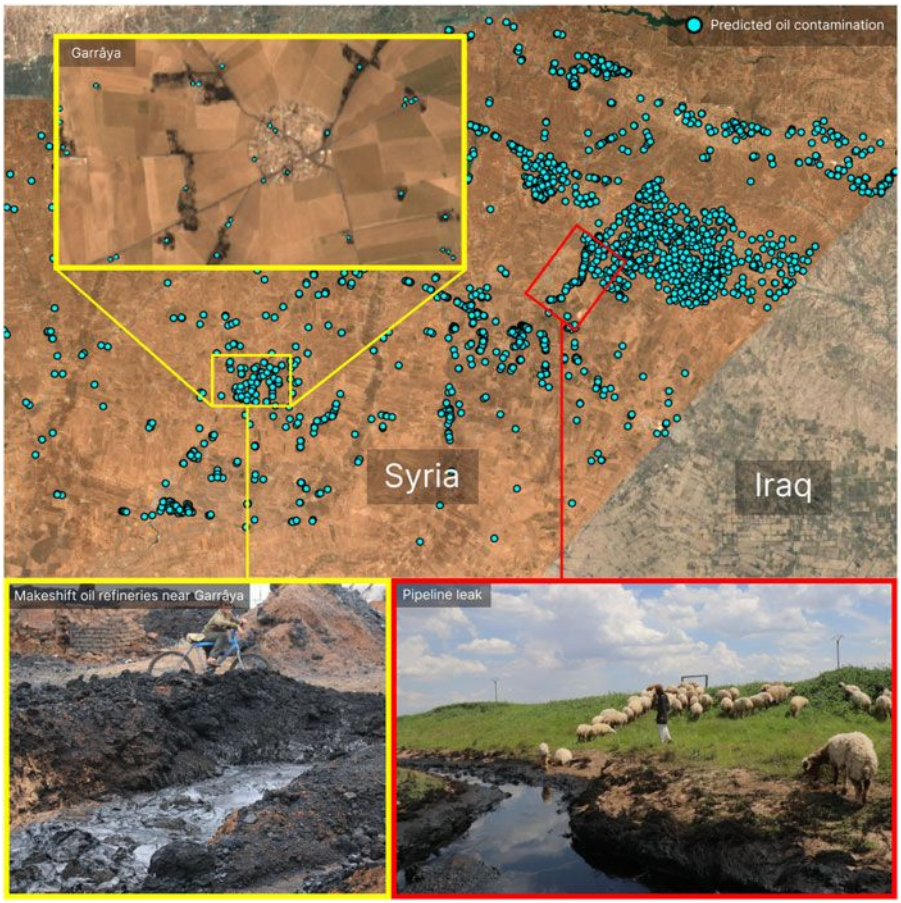

Figure 5. Makeshift refineries identified in northern Syria. Source: Author's analysis of Sentinel-2 imagery.

which returns the total number of contaminated points in the area of interest as well as the number of contaminated square metres. Such tools could be used or adapted by practitioners to deliver actionable insights required for clean-up efforts.

Lastly, with intense fighting in and shelling of populated areas, rapid damage assessments are vital for first responders and analysts working on debris removal and management to get a clear understanding of the scale of destruction and health risks.[71] ML applied to Sentinel-1 SAR imagery can be used to get an estimate of damaged buildings. Users can select their own area of interest to

71 Olivia Nielsen and Dave Hodgkin, "Rebuilding Ukraine: The Imminent Risks from Asbestos", UN Office for Disaster Risk Reduction, 7 June 2022, available at: www.preventionweb.net/blog/rebuilding-ukraine-imminent-risks-asbestos.

generate the percentage of urban areas that have been affected by the war.[72] Though this is an area that is still in development, with numerous challenges, it has been identified as an area of future potential by researchers applying ML to damage assessment of cities affected by ongoing wars.[73]

The examples given above provide an overview of the successful use of remote sensing tools in conflict-affected areas, but remote sensing also comes with significant limitations.[74] Firstly, in war zones with more cloud cover, such as tropical areas, or during wintertime, poor aerial visibility will constrain the timely availability of optical imagery. A second barrier is access to very high-resolution data; this type of data is still relatively expensive to acquire for researchers or organizations with small or no budgets. In addition, archive imagery from commercial providers frequently contains data previously ordered by their clients, which are often States or large corporations that have a certain location bias for security or commercial reasons. So, for example, there is abundant imagery on oil installations and certain urban areas in northern Libya, but hardly any imagery of rural areas in South Sudan, as there has been, to date, limited interest from commercial parties in acquiring these images.

Recent developments around air pollution detection pose similar challenges. Certain types of air pollution are not visible with the current resolution of public or satellite imagery; meanwhile, higher-resolution images are not easy to obtain as they are generated by specialized commercial satellites such as the latest one launched by the GHGSat project, dedicated to monitoring greenhouse gas emissions.[75] This sensor is capable of detecting small methane emissions but is only available for paying customers. Whereas with other optical data, one can still use different medium-resolution imagery or ground-based data to track a potential impact, identifying invisible air pollution remains a challenge.

Thirdly, misinterpretation of satellite imagery in the visual interpretation process is frequent, and this misinterpretation could under- or overestimate environmental impacts. Understanding landscapes or broader environmental occurrences is elementary for "reading" satellite imagery in order to understand what one is looking at. There have also been incidents in which researchers have used faulty classification of band-spectrum data to identify a certain type of value associated with an environmental occurrence that could lead to misinterpretation of events – for example, classifying seasonal phytoplankton algae in the sea as oil spills. Such false positives can be cause for misinformation and over- or under-

72 "Data from Satellites Reveal the Vast Extent of Fighting in Ukraine", *The Economist*, 23 February 2023, available at: www.economist.com/interactive/briefing/2023/02/23/data-from-satellites-reveal-the-vast-extent-of-fighting-in-ukraine.

73 Hannes Mueller, Andre Groeger and Jonathan Hersh, "Monitoring War Destruction from Space Using Machine Learning", *Proceedings of the National Academy of Sciences*, Vol. 18, No. 23, 2021, available at: www.pnas.org/doi/epdf/10.1073/pnas.2025400118.

74 Frank Witmer, "Remote Sensing of Violent Conflict: Eyes from Above", *International Journal of Remote Sensing*, Vol. 36, No. 9, 2015, available at: https://doi.org/10.1080/01431161.2015.1035412.

75 ESA, "GHGSat Instruments", 2023, available at: https://earth.esa.int/eogateway/missions/ghgsat#instruments-section.

calculation of environmental damages. They underscore the necessity of critical review, caution and inclusion of local expertise in reviewing data.

Fourthly, the use of remote sensing is mostly a tool for identifying and quantifying environmental risks and damages, through which better responses, and data to be used in norm-building and strengthening, can be developed. In applying these methods, researchers do not have to rely solely on remote sensing to determine causality between military activities and their environmental consequences. Verification of data through multiple sources, including OSINT and ground-truthing, is elementary for any attribution questions. This is particularly relevant for legal and policy avenues when it comes to attribution of severe damages to specific actors for which they can be held accountable.

Beyond the misinterpretation of satellite imagery by analysts, the growing use of automated and semi-automated tools poses challenges as well. Computer vision models are being used at scale to conduct everything from building damage assessment[76] to detecting mass graves.[77] These models are trained by feeding an ML algorithm a large quantity of labelled data on the phenomenon of interest, but many computer vision models struggle with generalization and become more error-prone when the input data differs significantly from the training data.[78]

Errors of both omission and commission can have significant implications in conflict settings. In the context of environmental monitoring, false negatives can have disastrous consequences if they allow risks to go unnoticed. False positives, on the other hand, can waste resources marshalled to address environmental disasters that haven't actually occurred, and reduce trust in a model. In all cases, automated and semi-automated tools for the classification of satellite imagery must be consumed critically and supplemented with external information to ensure that the weight of the conclusions is supported by the strength of the evidence.

However, due to the aforementioned general scarcity of data in conflict settings, access to ground-truth data necessary to validate the predictions of automated systems may not be available. Critical consumption of the outputs of these systems becomes even more important in this context, and there are several avenues through which this can be achieved. For all classification tasks, there are a number of accuracy statistics that are conventionally reported. "Accuracy" simply refers to the ratio of correct predictions to the total number of predictions, but this can be misleading in cases where one class is much more prevalent than another. "Precision" measures the proportion of positive predictions that are true positives, while "recall" measures the proportion of positive labels that were retrieved by the model. Depending on the scenario, a

76 K. Khoshnood *et al.*, above note 41.

77 Meg Kelly and Katharine Houreld, "Satellite Imagery Shows Evidence of New Graves after Tigray Massacres", *Washington Post*, 7 July 2023, available at: www.washingtonpost.com/world/2023/07/07/ethiopia-massacre-graves/.

78 Joy Buolamwini and Timni Gebru, "Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Glassification", *Proceedings of Machine Learning Research*, Vol. 81, 2018, available at: https://proceedings.mlr.press/v81/buolamwini18a.html.

false negative might be more dangerous than a false positive (for example, in cancer diagnosis), or vice versa. As such, users of automated and semi-automated systems would do well to delve beyond simple measures of accuracy associated with the models that they use.

Beyond model-level accuracy statistics, many models also provide information on the confidence level associated with each individual prediction. For example, CNNs used in object detection generally provide not only a classification but also an associated confidence score. A CNN trained to detect oil spills will thus not only highlight areas that it predicts to be oil spills but will also typically provide a score ranging from 0 to 1 denoting its confidence in this prediction. For ease of use, many products built on using such systems only communicate the classification result. Once again, it would behove analysts using such systems to carefully assess not only the prediction, but the associated confidence score.

Finally, there are conflict events that can result in environmental health risks but will go undetected for a long time with remote sensing data or open-source information. This could also create a technology bias, as in areas with limited internet availability or no use of smartphones to record incidents, the absence of information could create a data vacuum. Though remote sensing could partially cover this gap, awareness is needed in order to avoid focusing solely on digital evidence and to keep investing in conducting field assessments. Ground-truthing is also needed to verify remote sensing assessment, and particularly with the rise of citizen-science methods, there are ample means and methods for quickly collecting data in the field.[79]

Challenges and opportunities of innovative remote sensing for prevention of, response to and accountability for conflict-related environmental damage

This article set out to show how technology and digitization have shaped the trajectory of the environment–conflict nexus over the last decade. The application of open-source investigative techniques and satellite imagery has been an influential factor in the multilateral process to build and strengthen international norms around protection of the environment in relation to armed conflict. This is an important development that can further build accountability for environmental damages caused by States and non-State armed groups that have direct or long-term impacts on people and ecosystems. The ability to rapidly quantify the direct damage, such as the associated loss of livelihoods, the impact on food security or the exposure of civilians to a range of hazardous materials, has immense value. It has already been important for providing better guidance

79 Doug Weir, Dan McQuillan and Robert A. Francis, "Civilian Science: The Potential of Participatory Environmental Monitoring in Areas Affected by Armed Conflicts", *Environmental Monitoring and Assessment*, Vol. 191, 2019, available at: https://doi.org/10.1007/s10661-019-7773-9.

to militaries, as outlined in the updated *Guidelines on Protection of the Natural Environment in Armed Conflict* produced by the International Committee of the Red Cross (ICRC).[80]

These advances in remote sensing and open-source environmental investigations for conflict-linked environmental damages are, however, not providing a holistic picture. What this article demonstrates is that through these frontier technologies, the scientific insights of conflict-linked environmental damages went from a "low-resolution" to a "high-resolution" image of a war zone – i.e., the data and imagery are providing a clearer understanding of the reality on the ground. Despite these improvements, however, we do not yet have a "very high-resolution" image of this type of damage, due to the absence of solid ground-truthing of the data, and there are still a number of constraints and limitations, as shown above. Still, there is already significant progress in delivering insights and contributing to scientific knowledge of the environmental dimensions of conflict-related damage, while also pushing the policy debate on improving the protection of the environment in relation to armed conflict a significant step forward through quantification and visualization.

Moving forward, how can accountability be strengthened for environmental damage linked with military activities? The wealth of conflict data on environmental degradation that can now be generated is already strengthening norms, as the identification and publication loop is significantly shortened, providing media and policy-makers with near-real-time access to major events. This is particularly visible in the Russia–Ukraine armed conflict, where military operations around nuclear power plants closely monitored by satellites have spurred UN Security Council debates over the risks of a regional environmental catastrophe. The visibility of damage to the environment during that conflict has also renewed debates[81] over including "ecocide" as a crime in the Rome Statute of the ICC. Though neither party to the armed conflict is party to the ICC,[82] such a change would make it easier in the future to prosecute States and non-State actors for environmental damage. Exploring environmental accountability can build on historic examples around conflict-linked environmental damages, such as around the UN Compensation Commission's work on damages caused by Iraq's invasion of Kuwait,[83] and can be applied to cases such as the damage to the Nova Kakhova dam in Ukraine and its resulting environmental impacts.[84]

80 ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict*, Geneva, 2020, available at: www.icrc.org/en/publication/4382-guidelines-protection-natural-environment-armed-conflict.

81 Kate Mackintosh and Lisa Oldring, "Watch This Space: Momentum Toward an International Crime of Ecocide", *Just Security*, 5 December 2022, available at: www.justsecurity.org/84367/watch-this-space-momentum-toward-an-international-crime-of-ecocide/.

82 Neither Russia nor Ukraine has ratified the Rome Statute. Ukraine has, however, made a declaration accepting the ICC's jurisdiction over its territory for a fixed time period.

83 UNSC Res. 687, 3 April 1991, available at: https://uncc.ch/sites/default/files/attachments/documents/res0687.pdf.

84 PAX, "A Preliminary Environmental Risk Assessment of the Kakhova Dam Flooding", 13 July 2023, available at: https://paxforpeace.nl/news/a-preliminary-environmental-risk-assessment-of-the-kakhovka-dam-flooding/.

The challenges ahead for such legal efforts relate to the proper registration of damages, having access to pre-conflict data, and developing a rudimentary environmental impact analysis that helps to quantify environmental damages, associated socio-economic costs, climate impacts and public health risks. Establishing causal relationships between military activities and widespread and long-term environmental damages can both have a norm-building effect and, in specific cases, feed into compensation mechanisms.

The attention on the environment in Ukraine has already resulted in millions of dollars of funding for the UN to establish coordination mechanisms to collect and analyze data and work on environmental clean-up, remediation and restoration efforts, and this approach should be applied to all conflict-affected countries.[85]

Building accountability also depends on political forums or policies around environmental protection that have strong implementation mechanisms, political support and funding within their mandates. Various UNEA resolutions on conflict and environmental impacts will certainly benefit from dedicated and consistent implementation to ensure that they are fulfilling the intent with which they were created. At the same time, other international bodies addressing climate or environmental issues that are impacted by conflict lack any recognition of the conflict–environment nexus; this includes the UN Framework Convention on Climate Change, the Convention on Biodiversity, and the limited engagement on military activities and environmental impacts at the UN General Assembly, UN Human Rights Council and UN Security Council. Here lies an opportunity for the international community to work towards establishing a comprehensive approach to the environment, peace and security – one that bridges the policy gaps, connects discussions between these UN forums and international agreements, and at a bare minimum, establishes response mechanisms for conflict-linked environmental emergencies.

The opportunities that technology brings to this debate revolve around the relative ease of obtaining detailed auxiliary-level data on the environmental consequences of armed conflict, the health risks to civilians, the impact on natural resources that generate income for affected communities, and the broader damage to unique ecosystems and protected areas. With the help of ML, existing datasets on built-up areas, known industrial locations, critical infrastructure, protected areas and nature reserves, types of land cover and climate data can be linked with conflict events and used in automated environment assessment tools and predictive modelling of risks to civilians and ecosystems. Depending on needs, humanitarian organizations can make direct use of this information to improve coordination and response. Better quantification of environmental damage and estimations of financial losses can drive political and military strategic discussions that could have a preventive effect on battlefield decisions

85 UN Development Programme, "New Coordination Center to Assess Environmental Impacts of the War on Ukraine", 10 March 2023, available at: www.undp.org/ukraine/press-releases/new-coordination-center-assess-environmental-impacts-war-ukraine.

which would otherwise lead to serious environmental damage. Moreover, it could spur rapid clean-up and remediation efforts with the use of AI that is able to rapidly undertake spatio-temporal analysis of affected areas and provide data to authorities and relevant international organizations. The use of AI should require supervision by experts to verify and validate the results in order to prevent misidentification and ensure accountability for outcomes. These technological developments will increase the speed of analysis and response time to conflict events, bring more granular details to specific environmental consequences and contribute to more visibility of these dimensions of conflicts.

What remains a hanging thread is where the responsibility lies for undertaking such an imperative and groundbreaking effort. To ensure impartiality and independence, it would require the set-up of environmental architecture that brings together academia, civil society organizations and specialized UN agencies and that facilitates data collection, analysis, review of findings and dissemination of results. Through the sharing of data, dissemination of methods and training of local groups, the aim should be to have a decentralized approach where researchers and NGOs can work independently on applying these methodologies and avoid a monopoly of (Western) specialist agencies or groups doing the analysis. Such a broad endeavour, with local and academic expertise, can provide rapid response where needed, share insights in country-specific cases when discussed in multilateral bodies and inform relevant international debates on the environmental consequences of conflict (and potentially be linked with similar efforts on climate change). While the humanitarian and environmental community is at the threshold of a new era, the spread of AI in data collection, sharing and analysis will certainly push the debate into a new dimension where speed, visibility and accuracy will be game-changing in policy discussions and environmental response mechanisms. These developments and insights will highlight the need for improved protection of the environment, and the people depending on it, in times of armed conflict.

International Review of the Red Cross (2023), **105** (924), 1522–1542.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000243

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A possible legal framework for the exploitation of natural resources by non-State armed groups

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Abstract

The law of belligerent occupation permits the Occupying Power to administer and use the natural resources in the occupied territory under the rules of usufruct. This provision has no counterpart in the provisions of humanitarian law applicable to non-international armed conflicts, which may suggest that any exploitation of natural resources by non-State armed groups is illegal. The International Committee of the Red Cross's updated 2020 Guidelines on the Protection of the Environment in Armed Conflict *did not touch on this issue, and nor did the International Law Commission in its 2022 Draft Principles on the Protection of the Environment in Relation to Armed Conflicts, where it applied the notion of sustainable use of natural resources instead of usufruct. The present paper aims to fill this gap. It first reviews the development of the concept of usufruct and then studies whether the current international law entitles non-State armed groups with*

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de facto *control over a territory to exploit natural resources. By delving into the proposals raised by some commentators to justify such exploitation for the purpose of administering the daily life of civilian populations, the paper advocates for a limited version of this formula as the appropriate* lex ferenda. *In the final section, the paper discusses how situations of disaster, as circumstances which may preclude the wrongfulness of the act, may justify the exploitation of natural resources by non-State armed groups in the current international legal order.*

Keywords: non-State armed groups, exploitation of natural resources, International Law Commission, disaster, usufruct, occupation, sustainable use of natural resources.

Introduction

The desire to control natural resources has played an important role in the history of mankind, and there are many instances of wars between our ancestors for control over natural resources.[1] Draining rich natural resources was the main driving force of colonial powers, and interestingly, the dream of regaining those same resources triggered the decolonization uprisings in many countries, which in turn resulted in the establishment of many of the current member States of the United Nations (UN).[2] Various domains of international law reflect these historical experiences. For example, in response to the colonial system which for centuries enabled specific countries and their companies to "unjustly appropriate or dispossess natural resources occurring on distant territories of other peoples and populations",[3] the law and regulations regarding the right to self-determination stipulate how one nation may gain permanent sovereignty over its natural resources and in what manner investment treaties may regulate concession agreements.[4] From another angle, on the one hand, the law of belligerent occupation protects natural resources from pillage, and on the other, the rules of usufruct dictate how the Occupying Power may administer and use natural resources in order not to interrupt the daily life of those living under its jurisdiction in the occupied territory. The existence of these rules and regulations in the sphere of international law, irrespective of some of its shortcomings, guarantees the effectiveness of the law of nations so that international law not only evolves according to the needs of the international community but also remains reasonable and practical for all the actors involved.

1 See Simo Laakkonen and Richard Tucker, "War and Natural Resources in History: Introduction", *Global Environment*, Vol. 5, No. 10, 2012.
2 Yogesh Tyagi, "Permanent Sovereignty over Natural Resources", *Cambridge Journal of International and Comparative Law*, Vol. 4, No. 3, 2015.
3 Petra Gümplova, "Sovereignty over Natural Resources – a Normative Reinterpretation", *Global Constitutionalism*, Vol. 9, No. 1, 2020, p. 14.
4 See, for example, John Baloro, "The Legal Status of Concession Agreements in International Law", *Comparative and International Law Journal of Southern Africa*, Vol. 19, No. 3, 1986.

It is in this context that concerns and developments in environmental law become essential in addressing the subject of the exploitation of natural resources, particularly during armed conflicts, where the law is designed to regulate the conduct of the warring parties and to protect the individuals, groups and civilian objects, such as the natural environment, that may suffer greatly from the effects of the armed hostilities.[5]

The increasing awareness of humankind about the vital importance of the natural environment, in particular in the face of developments in means and methods of warfare, convinced the International Law Commission (ILC) and the International Committee of the Red Cross (ICRC) to convene new rounds of studies and consultations in order to address the shortcomings of the law in light of these new developments, as well as the practice. The ICRC updated its 1994 *Guidelines on the Protection of the Natural Environment in Armed Conflict* (ICRC Guidelines),[6] issued when the international community was reeling from the environmental devastation caused by the Persian Gulf War, and the ILC produced its 27 Draft Principles on Protection of the Environment in Relation to Armed Conflicts (ILC Draft Principles on the Environment),[7] in order to enhance the protection of the environment in times of armed conflict. Both institutions used their capacity and expertise to, *inter alia*, provide an updated interpretation of the *lex lata* in order to guarantee the effectiveness of the law via a reflection on the realities of current armed conflicts as well as the vulnerability of the environment. Nonetheless, neither the ICRC nor the ILC expanded the scope of their study to cover a reality that is not well considered in law: the existence of non-State armed groups (NSAGs) with *de facto* control over territories, and the way they exploit the natural resources of those territories. This approach is understandable because the current international law does not specifically address the phenomenon of exploitation of natural resources by NSAGs. The academic legal literature on the topic is also mainly concerned with abuses by NSAGs[8] and, except for a very few examples,[9] does not address their exploitation of natural

5 As an example, according to a study carried out by the ICRC, from 1946 to 2010, conflict was the single most important predictor of declines in certain wildlife populations. ICRC, "Natural Environment: Neglected Victim of Armed Conflict", 5 June 2019, available at: www.icrc.org/en/document/natural-environment-neglected-victim-armed-conflict (all internet references were accessed in June 2023).

6 ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict*, Geneva, 2020 (ICRC Guidelines), p. 4.

7 ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/77/10, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2022 (ILC Draft Principles on the Environment).

8 See, for example, Andronico O. Adede, "Protection of the Environment in Times of Armed Conflict: Reflections on the Existing and Future Treaty Law", *Annual Survey of International and Comparative Law*, Vol. 1, No. 1, 1994; Dieter Fleck, "Legal Protection of the Environment: The Double Challenge of Non-International Armed Conflict and Post-Conflict Peacebuilding", in Carsten Stahn and Jens Iverson (eds), *Just Peace after Conflict: Jus Post Bellum and the Justice of Peace*, Oxford University Press, Oxford, 2020; Larissa van den Herik and Daniëlla Dam-de Jong, "Revitalizing the Antique War Crime of Pillage: The Potential and Pitfalls of Using International Criminal Law to Address Illegal Resource Exploitation during Armed Conflict", *Criminal Law Forum*, Vol. 22, No. 3, 2011.

9 A review of the work of scholars who address this topic is provided in the below section entitled "Do NSAGs Have a Right to Exploit Natural Resources?".

resources, especially when they assume government-like functions. The present paper is an effort to contribute to the literature and fill this gap.

For this purpose, the paper first reviews the development of the concept of usufruct, from 1874, when the notion appeared in the Brussels Declaration, to the 2022 ILC Draft Principles on the Environment. Following this historical study, the paper tours the ideas raised by commentators, mainly with a focus on *de lege ferenda*, in extending the notion of usufruct to NSAGs with *de facto* control over territories. Guided by the findings of the historical background of usufruct in terms of international humanitarian law (IHL) and the concept of "sustainable use of natural resources" introduced by the ILC, the paper suggests a slightly different view in shaping future law. In the final section, the paper discusses how the notion of "sustainable use of natural resources", alongside other developments in international law, may provide a legal framework for assessing the legality of the exploitation of natural resources by NSAGs, in the event of disaster as a condition precluding the wrongfulness of the act of exploitation by NSAGs.

The evolution of the notion of usufruct in IHL

The exploitation of natural resources during an armed conflict by an adverse party is only regulated in the law applicable to situations of belligerent occupation. In accordance with a long-standing rule of customary IHL, the Occupying Power must administer the immovable public property located in the occupied territory under the rules of usufruct.[10] While categorizing natural resources under property, whether moveable or immovable, may sound strange to twenty-first-century environmentalists,[11] it seems that this was not the case in the nineteenth century. For example, Article 52 of the 1880 Oxford Manual stipulated that the occupant can only act as the provisional administrator of real property and clearly mentioned forests as an example of such real property.[12] Due to the status of the Occupying Power as a provisional administrator, the Manual provided that the occupant "must safeguard the capital of these properties and see to their maintenance".[13] This formulation was, to a large extent, a derivation from the formulation of such a right in the Lieber Code of 1863, as it permitted

10 Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005, Rule 51, available at: https://ihl-databases.icrc.org/en/customary-ihl. Also, the commentary to Rule 15(b) of the ICRC Guidelines explains that this rule encompasses obligations set out in Articles 46, 52, 53 and 55 of the 1907 Hague Regulations and Articles 53 and 55 of Geneva Convention IV. ICRC Guidelines, above note 6, para. 187.

11 See Jean D'Aspremont, "Towards an International Law of Brigandage: Interpretative Engineering for the Regulation of Natural Resources Exploitation", *Asian Journal of International Law*, Vol. 3, No. 1, 2013, p. 5.

12 Institute of International Law, *The Laws of War on Land*, Oxford, 9 September 1880 (Oxford Manual), in Dietrich Schindler and Jiri Toman (eds), *The Laws of Armed Conflicts*, Martinus Nijhoff, Dordrecht, 1988, pp. 36–48.

13 *Ibid.*

"sequesters for its own benefit or of that of its government all the revenues of real property belonging to the hostile government or nation" without emphasizing their perseverance.[14] More importantly, the above-mentioned provision of the Oxford Manual, which was adopted based on, among others, the Brussels Declaration of 1874,[15] did not explicitly refer to the right of the Occupying Power as usufructuary.[16]

Conversely, Article 7 of the Brussels Declaration, which was exactly repeated in Article 55 of the 1899 and 1907 Hague Regulations,[17] considered the Occupying Power both as administrator and usufructuary. Article 55 of the Hague Regulations provides:

> The occupying State shall be regarded only as administrator and usufructuary of public buildings, real estate, forests, and agricultural estates belonging to the hostile State, and situated in the occupied territory. It must safeguard the capital of these properties and administer them in accordance with the rules of usufruct.[18]

While Article 55 in its literal form seems not to make any distinction between renewable and non-renewable natural resources, the *travaux préparatoires* of Article 7 of the Brussels Declaration demonstrate that such a distinction was clearly what the delegates intended. The first draft of Article 7 that was put into discussion, prepared by Russia, was formulated in a negative form by limiting the rights of the Occupying Power to the rights of administration and enjoyment. This draft also prohibited any act that would not be justified by the usufruct.[19] The first suggestion was to replace the phrase "to refrain from anything that would not be justified by the usufruct" with a phrase that would recognize the Occupying Power as "usufructuary",[20] on the one hand, and "administrator", on

14 Francis Lieber, *Instructions for the Government of Armies of the United States in the Field*, General Order No. 100, 24 April 1863 (Lieber Code), Art. 31, in D. Schindler and J. Toman (eds), above note 12, pp. 3–23.

15 Institut de Droit International, *Annuaire de l'IDI*, Vol. 5, 1888, p. 151; see also Project of an International Declaration concerning the Laws and Customs of War, Brussels, 27 August 1874, Art. 7.

16 Roman law scholars considered property as the sum total of three rights that, together, gave one absolute control over a thing. These three rights were called *usus* (the right to use the thing), *fructus* (the right to take its fruits) and *abusus* (the right to dispose of the thing). Thomas J. McSweeney, "Property before Property: Romanizing the English Law of Land", *Buffalo Law Review*, Vol. 60, No. 4, 2012, pp. 1158–1159.

17 Regulations concerning the Laws and Customs of War on Land, Annexed to Convention (II) with Respect to the Laws and Customs of War on Land, The Hague, 29 July 1899 (1899 Hague Regulations), Art. 55; Regulations concerning the Laws and Customs of War on Land, Annexed to Convention (IV) respecting the Laws and Customs of War on Land, The Hague, 18 October 1907 (1907 Hague Regulations), Art. 55.

18 While both the Brussels Declaration and the Oxford Manual formed the basis of the two Hague Conventions on land warfare and the Regulations annexed to them, adopted in 1899 and 1907, the discussion on why the members of the Conference preferred the formulation of the Brussels Declaration is not recorded.

19 Art. 7: "L'armée d'occupation n'a que le droit d'administration et de jouissance des édifices publics, immeubles, forets et exploitations agricoles apparentent à l'État ennemi et se trouvent dans le paye occupe. Elle doit autant que possible sauvegarder le fonds de ces propriétés et s'abstenir de tout ce qui ne serait pas justifié par l'usufruit." *Projet d'une convention internationale concernant les lois et coutumes de la guerre (texte primitif soumis à la conférence): Conférence intergouvernementale (1874, Bruxelles)*, Les Freres van Cleef, The Hague, 1890 (Brussels Declaration), p. 215.

20 *Ibid.*, p. 102.

the other.[21] More importantly, during the discussions, the representative of Austria-Hungary emphasized that there should be a distinction between exploiting agricultural areas, on one side, and the exploitation of forests, on the other.[22] From his perspective, the risk to agricultural areas was limited in time, while the harm that might be caused by the exploitation of forests would last for many years and would be difficult to recover from. In this way, he suggested either prohibiting the Occupying Power from exploiting the forests or, alternatively, limiting any profit from their exploitation to the purposes that were already prescribed by the rules and regulations of occupied territories.[23] Other delegates were in favour of the latter proposal. The German delegation proposed to add that forests should be exploited in accordance with the rule of good and reasonable administration.[24] Despite these suggestions, the delegates decided not to make any distinction between the exploitation of agricultural areas and other natural resources, because they believed that the Brussels Declaration's articles should be limited to general principles. Moreover, they agreed that the record of this discussion in the proceedings would suffice to convene their intention, and in any case, the obligation of Occupying Powers to follow the rules and regulations of the occupied territory was already reflected in other articles.[25] This nevertheless demonstrates that apart from the good and reasonable administration of natural resources, the distinction between renewable and non-renewable resources was from the beginning part and parcel of the principles of administration and usufruct.

These considerations around the notion of usufruct have not only been followed in modern times but have also directed authorities to impose stricter regulations. For example, in 1947, the Nuremberg Tribunal in the *Flick* case described usufructuary as a privilege for occupants and held that "wherever the occupying power acts or holds itself out as owner of the public property owned by the occupied country, Article 55 [of the 1907 Hague Regulations] is violated".[26] State practice, gathered by the ICRC, demonstrates that while several military manuals have repeated the provisions of the Hague Regulations, others have added more details to the general rule not only to illustrate the meaning of usufruct but also to integrate the concept of sound and reasonable administration. For example, the manuals of Australia, Canada and New Zealand state that the public immovable property of the enemy may not be confiscated.[27] Canada's law of armed conflict manual indicates that "the

21 *Ibid.*, p. 103.
22 *Ibid.*
23 *Ibid.*
24 *Ibid.*
25 *Ibid.*, p. 104. Article 3 of the Brussels Deceleration reads: "With this object he shall maintain the laws which were in force in the country in time of peace, and shall not modify, suspend or replace them unless necessary."
26 Nuremberg War Crimes Trials, *USA v. Friedrich Flick et al.*, Case V, 3 March 1947–22 December 1947.
27 Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 2: *Practice*, Cambridge University Press, Cambridge, 2005, Rule 51, available at: https://ihl-databases.icrc.org/en/customary-ihl.

occupant becomes the administrator of the property and is able to use the property, but must not exercise its rights in such a wasteful or negligent way as will decrease its value".[28] The UK manual provides more detailed instructions on reasonable administration:

> The occupying power is the administrator, user and, in a sense, guardian of the property. It must not waste, neglect or abusively exploit these assets so as to decrease their value. The occupying power has no right of disposal or sale but may let or use public land and buildings, sell crops, cut and sell timber and work mines. It must not enter into commitments extending beyond the conclusion of the occupation and the cutting or mining must not exceed what is necessary or usual.[29]

In light of these practices, in her first report to the ILC, Marja Lehto, the Special Rapporteur of the Commission on the issue of protection of the environment in relation to armed conflicts, states that while the concept of usufruct has been traditionally regarded as applicable to the exploitation of all kinds of natural resources, including non-renewable ones,[30] such a right was never unlimited.[31] By referring to developments in related fields that have a bearing on the interpretation and implementation of the obligations of the Occupying Power in exploiting natural resources, such as the right to self-determination and permanent sovereignty over natural resources, the Special Rapporteur relies, *inter alia*, on the finding of the International Court of Justice (ICJ) in the *Armed Activities on the Territory of the Congo* case[32] to conclude that an important limitation under IHL is that the Occupying Power is permitted to exploit the natural resources of the occupied territory for the benefit of the local population.[33] With respect to developments in the law of occupation, she further submits that following Article 43 of the Hague Regulations, the Occupying Power is under the obligation to take care of the welfare of the occupied population and this "should be interpreted to entail environmental protection as a widely recognized public function of the modern State".[34] Moreover, with reference to the specific obligations of the Occupying Power, she states that the right of the occupant in relation to natural resources refers to "good housekeeping", according to which the usufructuary "must not exceed what is necessary or

28 Canada, *The Law of Armed Conflict at the Operational and Tactical Levels*, Office of the Judge Advocate General, 13 August 2001, para. 1243.

29 United Kingdom, *The Manual of the Law of Armed Conflict*, Ministry of Defence, 1 July 2004, para. 11.86.

30 Marja Lehto, *First Report on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/720, 30 April 2018, para. 30.

31 The Special Rapporteur argues that "the occupying State should use natural resources only to the extent of military necessity": *ibid.*, para. 31; See also para. 36, where she states that "[p]ursuant to article 55, the occupying State, as usufructuary, would be required to prevent overexploitation of the assets and to maintain their long-term value".

32 ICJ, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgment, *ICJ Reports 2005*, p. 168, para. 249.

33 M. Lehto, above note 30, paras 32–37.

34 *Ibid.*, para. 50.

usual" while exploiting natural resources.[35] Having this in mind, she describes the modern equivalent of usufruct as including sustainable use of natural resources as "a prolongation of the concepts of resource protection, resource preservation and resource conservation, as well as those of wise use, rational use or optimum sustainable yield".[36] On this basis, without using the term "usufruct" in her proposed draft principle, she states:

> To the extent that an Occupying Power is permitted to administer and use the natural resources in an occupied territory, for the benefit of the protected population of the occupied territory and for other lawful purposes under the law of armed conflict, it shall do so in a way that ensures their sustainable use and minimizes harm to the environment.[37]

In its commentary introducing the concept of "sustainable use of the environment" as a modern replacement of usufruct, the ILC emphasizes that the concept is nothing but the reflection of developments in international law, especially in the areas of human rights and environmental law.[38] On this basis, the Commission also stresses the precautionary principle in exploiting natural resources and states that the notion of sustainable use of natural resources "entails that the Occupying Power shall exercise caution in the exploitation of non-renewable resources, not exceeding preoccupation levels of production, and exploit renewable resources in a way that ensures their long-term use and capacity for regeneration".[39] In this way, the ILC revives the distinction between renewable and non-renewable natural resources that, as reflected above, was also a concern of the negotiating States when writing the international law on the exploitation of natural resources in occupied territories.

Not only did the inclusion of the notion of "sustainable use" as part of the obligations of the Occupying Power by the ILC receive no negative response, but also, States generally supported such an inclusion.[40] For example, for the Netherlands, a modern-day interpretation of usufruct would include the "sustainable use" of resources,[41] and for Jamaica, the draft principle was an effort to "bring the rules of usufruct into line with modern realities and developments in international environmental law".[42] Interestingly, the United States, while not opposing the inclusion, suggested replacing the word "shall" with "should", as in its view, the draft principle did not reflect an existing obligation under

35 *Ibid.*, para. 96.
36 *Ibid.*
37 ILC Draft Principles on the Environment, above note 7, Principle 20.
38 *Ibid.*, commentary on Principle 20, paras 8–9.
39 *Ibid.*, para. 9.
40 Marja Lehto, *Third Report on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/750, 1 June 2022, paras 235, 240.
41 *Official Records of the Sixth Committee of the UN General Assembly*, UN Doc. A/C.6/73/SR.29, 31 October 2018, para. 46.
42 *Official Records of the Sixth Committee of the UN General Assembly*, UN Doc. A/C.6/74/SR.33, 6 November 2019, paras 35–36.

international law.[43] The Special Rapporteur rightly rejected this suggestion, arguing that "both the concept of usufruct and that of 'sustainable use of natural resources' are designed to prevent *overexploitation*".[44] She further added that "an evolutionary interpretation of a general term in light of subsequent legal developments does not turn an established customary rule into a recommendation".[45] The designation of the notion of "sustainable use" to prevent "overexploitation" of natural resources by an Occupying Power, which is one of the major threats to biodiversity,[46] is a very important step in protecting the environment in situations of armed conflict. It also provides a more objective and contemporary understanding of the rule that exploitation of natural resources by an occupant which goes beyond the rules of usufruct – i.e., excessive consumption of resources[47] – may amount to pillage.

Principle 16 of the ILC Draft Principles on the Environment restates the prohibition on the pillage of natural resources in both international armed conflicts (IACs) and non-international armed conflicts (NIACs)[48] and emphasizes that it forms part of the broader context of illegal exploitation of natural resources that exists both during and after armed conflict.[49] By referring to the relevant UN Security Council resolutions,[50] the commentary adds that illegal exploitation of natural resources is a general notion that may also cover the activities of States or non-State entities.[51] But does this mean that from the ILC's perspective all exploitation of natural resources by NSAGs, apart from that which is justified by imperative military necessity,[52] should be considered illegal, since no corresponding provision to Article 55 of the Hague Regulations exists in the legal framework applicable to NIACs? From the ICRC's perspective, as much as the natural environment can be subjected to ownership, the prohibition on pillage applies to its appropriation or obtention when not justified by the exceptions provided in IHL.[53] The ICJ, in the *Armed Activities* case, although addressing the issue in the context of an IAC, expresses that the unlawful exploitation of natural resources, including gold and diamonds, falls within the scope of the prohibition on pillage.[54] But what if an NSAG does not appropriate, obtain or even benefit from the natural resources but rather uses them only for the benefit

43 *Protection of the Environment in Relation to Armed Conflicts: Comments and Observations Received from Governments, International Organizations and Others*, UN Doc. A/CN.4/749, 17 January 2022, p. 117.
44 M. Lehto, above note 40, para. 245 (emphasis added).
45 *Ibid.*, para. 245.
46 Biodiversity Information System for Europe, "Overexploitation", available at: https://biodiversity.europa.eu/europes-biodiversity/threats/overexploitation.
47 ICRC Guidelines, above note 6, commentary on Rule 15(b), para. 194.
48 ILC Draft Principles on the Environment, above note 7, p. 149.
49 *Ibid.*, para. 7.
50 See, for example, UNSC Res. 1457, 24 January 2003, para. 2, in which the Council "[s]trongly condemns the illegal exploitation of the natural resources of the Democratic Republic of the Congo"; and UNSC Res. 2136, 30 January 2014.
51 ILC Draft Principles on the Environment, above note 7, para. 7.
52 ICRC Guidelines, above note 6, commentary on Rule 14, para. 184.
53 *Ibid.*, para. 182.
54 ICJ, *Armed Activities*, above note 32, paras 237–250.

of the people living in the territories under its control? Moreover, does the nature of the natural resource in question – i.e., being renewable like plants or agricultural areas, or non-renewable[55] like minerals and fossil fuels – make any difference to this discussion?

These questions and, in general, the exploitation of natural resources by NSAGs engaged in NIACs have not been addressed either in the ICRC Guidelines or the ILC Draft Principles. The ILC Special Rapporteur, without explicit reference to this issue, admits in her second report that "while there are certain developments clarifying the status and international obligations of organized armed groups, a number of questions remain".[56] The next section aims to discover how scholarly works have addressed these questions.

Do NSAGs have a right to exploit natural resources?

According to an estimation provided by the ICRC, as of July 2022, a total of at least 175 million people are likely to live in areas controlled by armed groups.[57] In terms of territorial control, in 2022, the ICRC declared that seventy-seven armed groups fully and exclusively control territory and 262 armed groups contest and fluidly control territory. According to the ICRC data, a large number of these groups control territory for four years or more.[58] In such a context, it is not surprising that scholars have warned that for regulating the exploitation of natural resources, focusing merely on States, when rebels and other non-State groups exercise day-to-day *de facto* administrative control over some territories, is "problematic and a stumbling block to meaningful regulatory initiatives".[59] For example, Okowa, in light of the practice of some States in recognizing the Libyan National Transitional Authority as the legitimate representative of the Libyan

55 While different definitions of natural resources exist, in the present paper natural resources and renewable/non-renewable resources should be understood as per the definition used by the United Nations Environment Programme (UNEP) and relied on by the ICRC in its Guidelines: "Natural resources are actual or potential sources of wealth that occur in a natural state, such as timber, water, fertile land, wildlife, minerals, metals, stones, and hydrocarbons. A natural resource qualifies as a renewable resource if it is replenished by natural processes at a rate comparable to its rate of consumption by humans or other users. A natural resource is considered non-renewable when it exists in a fixed amount, or when it cannot be regenerated on a scale comparative to its consumption." ICRC Guidelines, above note 3, p. 75 fn. 416. Compared this with the definition of natural resources used by the World Trade Organization (WTO), which includes the element of "scarce and economically useful in production or consumption": WTO, *World Trade Report 2010*, 2010, p. 46, available at: www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf.

56 Marja Lehto, *Second Report on Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/728, 27 March 2019, para. 58.

57 Matthew Bamber-Zryd, "ICRC Engagement with Armed Groups in 2022", *Humanitarian Law and Policy Blog*, 12 January 2023, available at: https://blogs.icrc.org/law-and-policy/2023/01/12/icrc-engagement-armed-groups-2022/.

58 More concretely, 82% of groups that fully control territory have done so for four years or more and 62% of groups that fluidly control territory have done so for four years or more. *Ibid.*

59 Phoebe Okowa, "Sovereignty Contests and the Protection of Natural Resources in Conflict Zones", *Current Legal Problems*, Vol. 66, No. 1, 2013, p. 73.

people with competence to exploit and enter into resource-related transactions at a time when the Gaddafi regime was still in power,[60] argued that since "the exercise of public power by rebels has equally profound implications for the natural resources of the territory, … any regulatory regime ought to consider insurgent participation as a legitimate object for legal regulation".[61] This is while most scholars have elaborated prohibitive legal rules applicable to the conduct of NSAGs in exploiting natural resources during armed conflict.[62]

These rules, however, cannot address all possible scenarios that will be raised with regard to the exploitation of natural resources by NSAGs. Most importantly, when the basic needs of civilian populations in the territory under the control of the NSAG are not met, it seems unreasonable to consider any exploitation of natural resources by the group to be illegal when such exploitation is only for the benefit of those populations. Perhaps this was the reason why the European Union, in a regulation adopted in 2013, permitted, *inter alia*, the sale, supply or transfer of key equipment and technology for the key sectors of oil and natural gas in territories controlled by the Syrian oppositions "[w]ith a view to helping the Syrian civilian population, in particular to meeting humanitarian concerns, restoring normal life, upholding basic services, reconstruction, and restoring normal economic activity or other civilian purposes".[63]

This crucial aspect has led Dam-de Jong to reconsider the question of the exploitation of natural resources by NSAGs from another angle and to argue for a right for NSAGs to exploit natural resources. She submits that not all exploitation of natural resources by NSAGs should be considered illegal; rather, "an exception can be envisaged for small-scale natural resource exploitation that would enable armed groups to ensure the continuation of daily life in the territories that are under their control".[64] Her approach is based on offering the most protection possible to civilians affected by armed conflict. In this way, she argues:

> As the de jure government has lost control over these territories and is therefore not in a position to perform its obligations towards the local population, one could argue that an armed group that is capable of performing basic administrative functions would be entitled to exploit natural resources to generate revenues to sustain its own civilian administration of the territory and to cover the basic needs of the local population.[65]

60 Stefan Talmon, "Recognition of the Libyan National Transitional Council", *ASIL Insights*, Vol. 15, No. 16, 2011, available at: www.asil.org/insights/volume/15/issue/16/recognition-libyan-national-transitional-council.

61 P. Okowa, above note 59, p. 37.

62 See above note 8; see also Thibaud de la Bourdonnaye, "Greener Insurgencies? Engaging Non-State Armed Groups for the Protection of the Natural Environment during Non-International Armed Conflicts", *International Review of the Red Cross*, Vol. 102, No. 914, 2020.

63 Council Decision 2013/255/CFSP, Art. 10.

64 Daniëlla Dam-de Jong, "Greening the Economy of Armed Conflict: Natural Resource Exploitation by Armed Groups and Their Engagement with Environmental Protection", *Hague Yearbook of International Law*, Vol. 32, 2019, p. 184.

65 *Ibid.*

Dam-de Jong defends her argument by relying on the ruling of the ICJ in the *Namibia* case, the so-called "Namibia principle",[66] stating that the welfare of the local population should be taken into consideration when deciding on questions of whether or not to recognize the effects of legal acts undertaken by an illegal regime.[67] She acknowledges that it is not possible to infer a right to exploit natural resources by NSAGs from the general rules of permanent sovereignty over natural resources or the human right to self-determination.[68] However, she contends that such a right may be derived from the underlying rationality of the right of peoples to freely dispose of their natural resources, which aims to ensure that peoples are the main beneficiary in the exploitation of those resources.[69] She suggests that "the pragmatism that is inherent in international law regulating other situations in which an authority has effective control over territory without a valid legal title" would reinforce such a conclusion.[70] In this way, she argues that the same rationality that could justify the inclusion of a regime of usufruct for the exploitation of natural resources by the Occupying Power can be extended to NSAGs since, like the case of occupation, it is "the continuation of daily life in the occupied territory" that overrides the need for a valid legal title.[71] She strengthens her argument by contending that her conclusion accords with the underpinning idea of Additional Protocol II[72] and Article 3 common to the four Geneva Conventions, applicable to NIACs, which is to protect the civilian population, as well as the Martens Clause, which in her words "indicates that the well-being of the civilian population is paramount" and "should therefore always be taken into consideration in interpreting and applying the law".[73]

In order to apply the concept of usufruct to NIACs, Dam-de Jong limits its application to territories falling under the effective control of an armed group. Relying on Article 43 of the 1907 Hague Regulations, she adds the criteria of being "highly organized" for NSAGs to be able to act within the territory under their control as a *de facto* authority.[74] This would mean, for example, that NSAGs may be entitled to exploit not only water resources in the territories under their control but also non-renewable natural resources such as oil in order to maintain their civil administration and to meet the needs of the population under their control.

66 ICJ, *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970)*, Advisory Opinion, *ICJ Reports 1971*, p. 16.
67 D. Dam-de Jong, above note 64, p. 185.
68 *Ibid.*, p. 206.
69 *Ibid.*, p. 184.
70 *Ibid.*
71 *Ibid.*, p. 185.
72 Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978).
73 D. Dam-de Jong, above note 64, p. 206.
74 Daniëlla Dam-de Jong, "Armed Opposition Groups and the Right to Exercise Control over Public Natural Resources: A Legal Analysis of the Cases of Libya and Syria", *Netherlands International Law Review*, Vol. 62, No. 1, 2015, p. 21.

While such a conclusion has definitely been developed in response to the humanitarian needs of people living in territories under the control of NSAGs, we believe that granting a "complete" right of usufruct to NSAGs, analogous to that of the Occupying Power, in the absence of a legal provision, cannot be justified at all times even if the exploitation is for the benefit of people living under the control of an NSAG. In this regard, it should be noted, firstly, that the rights of the Occupying Power to exploit natural resources include both administration and use of those resources. While meeting the needs of civilians may justify the administration of, for example, existing water resources, this objective rarely justifies the entitlement of an NSAG to benefit from such exploitation. As discussed above, in the historical background of the adoption of Article 55 of the Hague regulations, the two notions of administration and usufruct, while interlinked, were considered as two different concepts, evidenced by the fact that the Oxford Manual contained no reference to the right of usufruct. Moreover, the inclusion of the rights of both administration and enjoyment for the NSAG may to some extent contravene the UN Security Council's statement that the warring parties to a conflict should not use natural resources to perpetuate the conflict.[75]

Secondly, the idea of analogous occupant rights for NSAGs is challengeable because this approach does not make any distinction between the exploitation of renewable and non-renewable resources. It is true that control over renewable resources, particularly when they are scarce, may not only contribute to escalations of conflict[76] but may also lead to using such resources as a method of warfare.[77] Despite these concerns, it is difficult and even impractical not to permit an NSAG to exploit renewable resources in order to meet the needs of people under its control, if those resources are administered in accordance with the ILC's proposal: "in a way that ensures their long-term use and capacity for regeneration".[78] It is difficult, however, to extend such a conclusion to the

75 See, for example, UNSC Res. 1625, 14 September 2005, para. 6. See also the statement of the UN Secretary-General to the Security Council in which he notes that since 1990, 75% of civil wars in Africa have been partially funded by revenues from natural resources. António Guterres, "Remarks to Security Council on the Maintenance of International Peace and Security: The Root Causes of Conflict – The Role of Natural Resources", 16 October 2018, available at: www.un.org/sg/en/content/sg/speeches/2018-10-16/maintenance-international-peace-and-security-remarks-security-council.

76 For example, a study on the causes of conflict in Darfur from 1930 to 2000 demonstrated that competition for pastoral land and water has been a driving force behind the majority of local confrontations for the last seventy years. See UNEP, *Toolkit and Guidance for Preventing and Managing Land and Natural Resources Conflict*, 8 October 2012, p. 30, available at: www.un.org/en/land-natural-resources-conflict/pdfs/GN_Renew.pdf

77 For example, see the practice of the so-called Islamic State group in weaponizing water resources. Tobias von Lossow, "Water as Weapon: IS on the Euphrates and Tigris", SWP Comments No. 3, German Institute for International and Security Affairs, 2016, available at: www.swp-berlin.org/publications/products/comments/2016C03_lsw.pdf; Irene Mia and Rica Pepe, "Climate Change and the Instrumentalisation of Natural Resources in the Continuum of War: The Role of Non-state Armed Groups and International Responses", International Institute for Strategic Studies, 18 November 2022, available at: www.iiss.org/blogs/analysis/2022/11/acs-2022-climate-change-and-the-instrumentalisation-of-natural-resources; Marwa Daoudy, "Water Weaponization in the Syrian Conflict: Strategies of Domination and Cooperation", *International Affairs*, Vol. 96, No. 5, 2020.

78 ILC Draft Principles on the Environment, above note 7, Principle 20, para. 9.

exploitation of non-renewable resources in the face of both the very nature of these kinds of resources, which exist in a fixed amount or cannot be regenerated on a scale compared to their consumption, and the pattern of abusive practices of NSAGs exploiting resources such as diamonds or oil.[79]

While we agree with Dam-de Jong that the protection of the civilian population should, from a *de lege ferenda* perspective, permit NSAGs to exploit natural resources, we believe that this authorization cannot be considered analogous to the privileges of the Occupying Power as being both administrator and usufructuary. In other words, we agree with the rationale and arguments of Dam-de Jong that an NSAG can exploit natural resources to meet the needs of civilians in the territory under its control, but we believe that such a permission should be minimal and strictly limited to its purpose in order to bar any possibility of abuse.[80] Furthermore, we suggest that such a permission, contrary to the right of an Occupying Power, should be limited only to the administration of renewable resources.

This argument is a limited version of what is proposed by Dam-de Jong and consequently suffers from the same deficiencies, chief among them being the lack of a solid base or non-recognition in international law of a right for an NSAG to exploit natural resources in territories under its control. Dam-de Jong herself acknowledges that in the absence of consistent practice and *opinio juris* on the part of States on the subject, there appears to be no solid legal basis for a right of armed groups to exploit the natural resources under their control.[81] Nonetheless, as developed in the next section, we argue that limited exploitation of natural resources by NSAGs for the benefit of the local population can be justified as a matter of *lex lata* when a situation of humanitarian emergency exists.

Legality of the exploitation of natural resources in the event of disaster

In this section, we argue that in the event of a disaster, the exploitation of natural resources by NSAGs may be legally justified because the occurrence of a disaster may exclude the wrongfulness of the acts of NSAGs in international law. In this way, we contend that while, as discussed in the previous section, the legality of

79 According to a report published by UNEP in 2009, since 1990, at least eighteen civil wars have been fuelled by non-renewable natural resources such as diamonds, timber, oil, and minerals. UNEP, *Protecting the Environment during Armed Conflict*, 2009, p. 8.

80 Apart from the risk of abuse by NSAGs, which is also a risk with regard to occupying States, we believe that in granting rights to NSAGs comparable to those of States, it should not be forgotten that States, besides the rights granted to them, have heavy legally binding obligations under international law. For example, corresponding to the right of a State to exploit the natural resources located in an occupied territory in the context of usufruct, Geneva Convention IV, the Hague Regulations and other applicable rules impose many obligations on that State as the Occupying Power. These rules do not necessarily encompass many counterpart obligations applicable to NSAGs. From this, it can be also suggested that in the process of designing *lex ferenda*, any right granted to NSAGs must be accompanied by related obligations.

81 D. Dam-de Jong, above note 64, p. 188.

the exploitation of natural resources by NSAGs, outside the scope of imperative military necessity, remains controversial, the existence of a disaster and the obligation of NSAGs to provide relief may justify such exploitation subject to the conditions detailed below.

In 2016, the ILC launched its Draft Articles on the Protection of Persons in the Event of Disasters (ILC Draft Articles on Disasters).[82] These articles, in sum, are an attempt by the ILC to codify and develop the rules of international law in order to enhance the protection of persons suffering from disasters. Unfortunately, however, the protection discussed in the Draft Articles on Disasters does not explicitly address the situation of persons living in territories under the control of NSAGs, even though, following the adoption of the Draft Articles by the ILC, disasters such as the COVID-19 pandemic, the famine and cholera in Yemen, and recently the earthquake in Syria have had an even more severe effect on persons living under the *de facto* control of NSAGs.[83] Perhaps this is the reason why some scholars, while referring to the various responses to COVID-19 by NSAGs, argue that these situations provide an opportunity to add an additional layer to the existing literature, "focusing on emergency governance by armed non-state actors".[84]

Article 3(a) of the ILC Draft Articles on Disasters describes the term "disaster" as "a calamitous event or series of events resulting in widespread loss of life, great human suffering and distress, mass displacement, or large-scale material or environmental damage, thereby seriously disrupting the functioning of society". The commentary on this article, relying on the provisions of the Tampre Convention,[85] emphasizes that the results mentioned in the article and the disruption of the functioning society are necessary elements in the definition of disaster, distinguishing it from other events that may affect a community.[86]

While, as pointed out by Siddiqi, "[t]here is empirical evidence of the increased frequency and intensity of disasters in the most conflict-affected states",[87] the ILC does not explicitly distinguish between disasters which might happen due to the occurrence of an armed conflict and other situations of disaster. However, the elements mentioned above for the characterization of disaster support the conclusion that an armed conflict, *per se,* cannot necessarily

82 ILC, *Draft Articles on the Protection of Persons in the Event of Disasters, with Commentaries*, UN Doc. A/71/10, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2016 (ILC Draft Articles on Disasters).

83 See, for example, Irénée Herbet and Jérome Drevon, "Engaging Armed Groups at the International Committee of the Red Cross: Challenges, Opportunities and COVID-19", *International Review of the Red Cross*, Vol. 102, No. 915, 2020. See also Geneva Call's COVID-19 Armed Non-State Actors' Response Monitor, available at: www.genevacall.org/covid-19-armed-non-state-actors-response-monitor/.

84 Sandra Krähenmann, Ximena Galvez Lima and Hiba Mikhail, "Emergency Governance: Armed Non-State Actors Facing COVID-19", *Armed Groups and International Law*, 2 March 2022, available at: www.armedgroups-internationallaw.org/2022/03/02/emergency-governance-armed-non-state-actors-facing-covid-19/.

85 Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations, 2296 UNTS 5, 18 June 1998.

86 ILC Draft Articles on Disasters, above note 82, para. 5.

87 Ayesha Siddiqi, "Disasters in Conflict Areas: Finding the Politics", *Disasters*, Vol. 42, No. 2, 2018, p. 4.

be considered a disaster.[88] This conclusion may also be understood from the fact that as clearly mentioned in Article 18(2), the ILC Draft Articles on Disasters do not apply to the extent that the response to a disaster is governed by the rules of IHL. The commentary to Article 18(2) elaborates that the formulation of the article was intended, on the one hand, to emphasize the IHL rules as the *lex specialis* of situations of armed conflict, and, on the other, to highlight that the Draft Articles "would continue to apply 'to the extent' that legal issues raised by a disaster are not covered by the rules of international humanitarian law".[89] In this respect, it is important to note that the Draft Articles on Disasters also cover the human rights of persons affected by disasters.[90] This would mean that in times of disaster that occur during an armed conflict, the Draft Articles are intended to be implemented as complementary to the rules of both IHL and international human rights law (IHRL).

The ILC Draft Articles on Disasters are only focused on the obligations of States and do not address NSAGs expressly, but they contain elements that may justify the application of some of their provisions to NSAGs. With general reference to the international law obligations of affected State, Article 10(1) indicates that an affected State has the duty to ensure the protection of persons and the provision of disaster relief assistance not only in its territory but also "in territory under its jurisdiction or control". Interestingly, while the commentary on this article explicitly states that such a duty stems mainly from State's sovereignty, it immediately adds that a State does not necessarily have sovereignty "in territory under its jurisdiction or control".[91] In the same vein, Article 3(b) defines an "affected State" as including "a State in whose territory, *or in territory under whose jurisdiction or control*, a disaster takes place" (emphasis added). The commentary further adds that "in exceptional cases, there may be two affected States: the State upon whose territory the disaster occurs and the State exercising jurisdiction or control over the same territory".[92] The reference to "exceptional cases" indicates that the ILC did not restrict itself to a "sovereignty-based approach" and instead took an "effective approach". In other words, the ILC, with the aim of enabling international law to enhance the level of protection of persons in the event of disasters, did not link the "duty to ensure the protection" to sovereignty; rather, it provides that in territories where the State has a kind of control, the mentioned duty to protect will be applicable.

While the notion of "sovereignty" is not discussable at all when it comes to NSAGs, the fact that they may exercise effective control over some territories is undeniable. According to a study carried out by the ICRC on the roles of NSAGs,

88 See also ILC Draft Articles on Disasters, above note 82, para. 10.

89 *Ibid.*, commentary on Art. 3, paras 8–9. The commentary on Article 18 further states: "The present draft articles would thus contribute to filling legal gaps in the protection of persons affected by disasters during an armed conflict while international humanitarian law shall prevail in situations regulated by both the draft articles and international humanitarian law": *ibid.*, commentary on Art. 18, para. 9.

90 Article 5 emphasizes that these persons are "entitled to the respect for and protection of their human rights in accordance with international law".

91 *Ibid.*, commentary on Art. 10, para. 3.

92 *Ibid.*, commentary on Art. 3, para. 15.

"some non-State armed groups may develop State-like capacities and provide services for the population".[93] In such a context, if the criterion of the application of Article 10(1) is the exercise of control, it is difficult not to conclude that the general duty referred to in this draft article will also be applicable to those NSAGs which exercise *de facto* control over a territory.

It is beyond the scope of this paper to dig into controversies over the subject of the duty of NSAGs to protect persons living in territories under their control and who are affected by the hostilities – a duty that is widely discussed in the legal literature[94] – but for the sake of the present discussion it seems sufficient to remind ourselves that, in its 2011 IHL Challenges Report, the ICRC states that in cases where the NSAG by virtue of stable control over territory has the ability to act like a State, "human rights responsibilities may therefore be recognized *de facto*".[95] Needless to say, this does not exclude the general protections of IHL.[96] In other words, like the Occupying State, in times of disaster, an NSAG is under dual obligations from both the IHL and IHRL perspectives to respond to those needs. More specifically, in times of disasters such as epidemics, pandemics or natural disasters, individuals living under the control of NSAGs are still entitled to minimum standards of treatment.

From the foregoing, one may conclude that although the rules of IHL do not encompass any clear reference to the "usufructuary function" of NSAGs with *de facto* control over a territory, this humanitarian consideration, which also mirrors the effective approach taken by the ILC in Draft Articles on Disasters, results in permitting NSAGs to administer and use properties including the natural resources available in the territory under their *de facto* control to respond to these needs in times of disaster.

Although stricter than the argument raised by Dam-de Jong, the above reasoning may face similar criticisms, as mentioned earlier – i.e., the lack of legality or non-recognition in international law of a right for an NSAG to act as usufructuary in territories under its control. In other words, this reasoning does not automatically preclude the wrongfulness of the act of exploitation of natural resources by an NSAG under the current international rules and regulations. Having this in mind, we assert that another criterion is needed to justify the legality of the exploitation of natural resources by an NSAG in response to a disaster: when the event of disaster amounts to a situation of *force majeure* or distress, or a state of necessity.

The ILC has codified these elements as circumstances recognized under customary international law to preclude the wrongfulness of acts or omissions by

93 ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, Geneva, 2019, p. 52.

94 See, for example, Katharine Fortin, *The Accountability of Armed Groups under Human Rights Law*, Oxford University Press, Oxford, 2017.

95 ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, Geneva, 2011, pp. 14–15, available at: www.icrc.org/en/doc/assets/files/red-cross-crescent-movement/31st-international-conference/31-int-conference-ihl-challenges-report-11-5-1-2-en.pdf.

96 See Tilman Rodenhäuser, "The Legal Protection of Persons Living under the Control of Non-State Armed Groups", *International Review of the Red Cross*, Vol. 102, No. 915, 2021.

States and international organizations respectively.[97] In its introductory commentary on Chapter V of its 2011 Draft Articles on the Responsibility of International Organizations, the ILC stipulates that there is "little reason for holding that circumstances precluding wrongfulness of the conduct of States could not be relevant also for international organizations".[98] The commentary on this chapter does not provide any other argument to justify this reading, but it is nonetheless clear that when international law imposes some obligations on international organizations and there is a possibility of raising their international responsibility due to non-compliance, there should also be some situations that preclude the wrongfulness of their actions. Yet, as stated by the ILC, "this does not imply that there should be a presumption that the conditions under which an organization may invoke a certain circumstance precluding wrongfulness are the same as those applicable to States".[99] On this basis, compared to those enshrined in its 2001 Draft Articles on Responsibility of States for Internationally Wrongful Acts, the ILC drew stricter lines for international organizations to invoke these circumstances. For example, while the 2001 Draft Articles permit States to invoke a state of necessity to, *inter alia*, safeguard an essential interest of their own, Article 25 of the 2011 Draft Articles excludes safeguarding the essential interest of the international organization, stating that "as a matter of policy, necessity should not be invocable by international organizations as widely as by States".[100]

The increasing level of violations of IHL by organized NSAGs with *de facto* control over territories in recent years has triggered a series of scholarly works on the concept of international responsibility of these entities.[101] The ILC Draft Principles on the Environment do not enter into this discussion, but Principle 9(3)(a) indicates that these draft principles are without prejudice to "the rules on the responsibility of non-state armed groups". The commentary on this provision stipulates that this area is less settled in international law.[102] The ILC Special Rapporteur, in her second report, delved into this issue and, after reviewing the challenges in international law with regard to applying the secondary rules to NSAGs, stated that "the international responsibility of organized armed groups, while not a legally uncharted area, is a fragmented topic on which few solid conclusions can

97 ILC, *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2001 (ARSIWA); ILC, *Draft Articles on the Responsibility of International Organizations*, in *Yearbook of the International Law Commission*, Vol. 2, Part 2, 2011 (DARIO).

98 DARIO, above note 97, p. 70, Introduction to Chap. V, para. 2.

99 *Ibid.*

100 *Ibid.*, commentary on Art. 25, para. 4.

101 See, for example, Ezequiel Heffes and Brian E. Frenke, "The International Responsibility of Non-State Armed Groups: In Search of the Applicable Rules", *Goettingen Journal of International Law*, Vol. 8, No. 1, 2017; Laura Inigo Alvarez, *Towards a Regime of Responsibility of Armed Groups in International Law*, Intersentia, 2020; Annyssa Bellal, "Establishing the Direct Responsibility of Non-State Armed Groups for Violations of International Norms: Issues of Attribution", in Noemi Gal-Or, Cedric Ryngaert and Math Noortmann (eds), *Responsibilities of the Non-State Actor in Armed Conflict and the Market Place*, Brill, Leiden, 2015. See also ILA, *Washington Conference 2014: Non-State Actors*, 3rd report prepared by co-rapporteurs Cedric Ryngaert and Jean d'Aspremont, 2014.

102 ILC Draft Principles on the Environment, above note 7, commentary on Principle 9, para. 12.

be drawn".[103] She referred to a 2014 International Law Association (ILA) report which concludes that "the mechanism of direct responsibility of [organized armed groups] seems to be, at the very best, a doctrine *in statu nascendi*".[104] A thorough discussion of the concerns raised by the ILA report and other scholars is beyond the scope of this paper, but we believe the concerns raised, such as complications in terms of the attribution of wrongful acts to NSAGs or of reparations, are without prejudice to the general principle that is reflected in all legal systems which stipulates that whenever the responsibility of an entity is raised, that entity is entitled to justify its conduct with reference to surrounding circumstances.[105] This is the difference that exists between, in the words of the ILC, the "sword" and the "shield".[106] In other words, while there are still many uncertainties regarding how the rules of international responsibility apply to NSAGs as a "sword", the idea that an NSAG, like any other entity or individual, has the right to use a "shield" to justify non-performance is not subject to controversy. As we discuss below, however, the size of the NSAG's "shield" is much smaller than the one that is designed for States in international law.

Although relying on the regime of international responsibility of States or international organizations is an appropriate technique for imagining the future law on international responsibility of NSAGs, as pointed out by Herman, "it should not be understood as a process of mechanically copying and pasting legal rules and principles".[107] This was exactly the approach of the ILC in creating the 2011 Draft Articles on the Responsibility of International Organizations. It is in line with this approach that we argue that even stricter lines should be drawn for circumstances which may preclude the wrongfulness of the conduct of NSAGs – that is, only when due to the occurrence of a disaster, the life and dignity of people living in territories under the control of an NSAG are in danger.

On this basis, we argue that in times of disaster, a very narrow reading of the above-mentioned circumstances may preclude the wrongfulness of exploitation of natural resources by NSAGs if: (1) the situation of disaster reaches the level of *force majeure* as indicated in Article 23 of the 2001 and 2011 Draft Articles, and this situation, either alone or in combination with other factors, is not due to the conduct of the NSAG invoking it or the NSAG has not assumed the risk of that situation occurring; or (2) the NSAG has no other reasonable way, in a situation of distress due to the occurrence of the disaster, of saving the lives of persons living or being present in the territory under its *de facto* control, providing that the situation of distress, either alone or in combination with other factors, is not due to the conduct of the NSAG invoking it or the exploitation is

103 M. Lehto, above note 56, para. 58.

104 ILA, above note 101, p. 11.

105 For further discussion, see Federica I. Paddeu, "Circumstances Precluding Wrongfulness", *Oxford Public International Law*, 2014, available at: https://opil.ouplaw.com/display/10.1093/law:epil/9780199231690/law-9780199231690-e2151.

106 ARSIWA, above note 97, commentary on Chap. V, para. 2.

107 Olivia Herman, "Beyond the State of Play: Establishing a Duty of Non-State Armed Groups to Provide Reparations", *International Review of the Red Cross*, Vol. 102, No. 915, 2020, p. 1043.

not likely to create a comparable or greater peril;[108] or (3) the occurrence of the disaster reaches the level of a state of necessity as indicated in Article 25 of the 2001 and 2011 Draft Articles and the exploitation is the only means for the NSAG to safeguard against a great and imminent peril to an essential interest of the population living or being present in the territory under its *de facto* control, providing that the NSAG has not contributed to the situation of necessity.

Moreover, it is important to note that in accordance with Article 27(a) of the 2001 and 2011 Draft Articles, "a circumstance may preclude wrongfulness only insofar as it covers a particular situation. Beyond the reach of the circumstance, wrongfulness of the act is not affected."[109] Paddeu and Waibel have perfectly commented on this statement by adding that "determining the start and end dates of the situation of necessity can be a difficult and imprecise assessment, especially in situations of crises or emergencies. These do not need to overlap with the situation of necessity. This is a matter that requires objective determination."[110] On this basis, they argue that "it is not necessary that the situation return to its pre-crisis normality before the state of necessity ends".[111] This generally accepted principle applies to all circumstances discussed above.[112]

This leads us to conclude that the occurrence of a disaster only in very limited situations, as discussed above, may preclude the wrongfulness of exploitation of natural resources by an NSAG in a restricted time and scale. Of course, overexploitation or any violation of the provision contained in Principle 20 of the ILC Draft Principles on the Environment with respect to sustainable use may result in pillage or other wrongful acts under international law. Therefore, this criterion only works when the two other elements are also met: (1) the exploitation is solely for the purpose of meeting the needs of people living in territories under the effective control of the NSAG and who are affected by the disaster, and (2) the exploitation is not carried out in violation of the formula provided by the ILC for sustainable use of natural resources, which is that the NSAG shall exercise caution in the exploitation of non-renewable resources, not exceeding the levels of production that existed before the territory fell into the hands of the NSAG, and shall exploit renewable resources in a way that ensures their long-term use and capacity for regeneration.

Conclusion

More than ever, the prevailing realities of the current international community demonstrate the need to go beyond prohibitive rules in regulating the conduct of NSAGs, as they have proved to be persistent players affecting the lives of millions

108 ARSIWA, above note 97, Art. 24; DARIO, above note 97, Art. 24.
109 DARIO, above note 97, commentary on Art. 27, para. 1.
110 Federica Paddeu and Michael Waibel, "Necessity 20 Years On: The Limits of Article 25", *ICSID Review – Foreign Investment Law Journal*, Vol. 37, No. 1–2, 2022, p. 181.
111 *Ibid.*, p. 182.
112 ARSIWA, above note 97, commentary on Art. 27, para.1.

of people around the world. For this purpose, among different fields of international law, IHL, as the law applicable to all parties to an armed conflict, including NSAGs, is in a better situation to regulate the conduct of these groups. To ensure the protection of all those affected by armed conflicts, scholars have recently addressed complicated issues related to, for example, NSAGs' conduct of hostilities, detention and courts, in order to extend the rules and principles of IHL to the conduct of these actors. In the sphere of the protection of the environment during armed conflicts, the same realities have convinced some commentators to assert that the notion of usufruct, as defined in the law of occupation, may also be of use to legitimize the exploitation of natural resources by NSAGs. This paper, while touching on the realities on the ground, takes a more precautionary approach on the subject due to concerns over the increasing vulnerability of the natural environment in recent armed conflicts. Based on the proposal by the ILC, it argues that, in designing the law appropriate to this situation, any right granted to NSAGs to exploit natural resources should be limited by distinguishing between administration and the use of natural resources, on one side, and between renewable and non-renewable natural resources, on the other. The paper contends that it is only in situations of disaster which may result in the occurrence of circumstances that preclude the wrongfulness of the exploitation of natural resources by an NSAG that such exploitation may be justified in current international law. These circumstances, nevertheless, may in no case legitimize the exploitation of natural resources for the benefit of the group or beyond the lines drawn by the ILC under the notion of "sustainable use of natural resources".

International Review of the Red Cross (2023), **105** (924), 1543–1567.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000322

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A galaxy of norms: UN peace operations and protection of the environment in relation to armed conflict

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Abstract

Given the increasing size and functions of United Nations (UN) peace operations (POs) and the fact that they often operate in contexts where natural resources are degraded, POs have repercussions on the environment. Yet, there is not much literature on their obligations regarding the protection of the environment in relation to armed conflicts. This article provides insights into the obligations of POs in relation to armed conflict. First, it highlights POs' customary international environmental law obligations. Second, it delves into their environmental obligations under the UN's internal rules and the host State's laws. Third, it explores obligations that arise from their mandates. In each of these sections, the article highlights the relevance and application of these obligations in armed conflicts. The last section examines the obligations of POs to protect the natural environment under international humanitarian law.

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Keywords: peace operations, environment, United Nations, international humanitarian law, human rights law.

Peace operations and the environment: Setting the scene

Maintaining international peace and security and promoting higher standards of living and socio-economic development are among the core functions of the United Nations (UN). The UN has been using peace operations (POs)[1] as part of its broader efforts to achieve these objectives and sustain peace worldwide.[2] This article focuses on the environmental obligations of POs in relation to armed conflict. POs are often deployed in areas affected by armed conflict that has resulted in environmental degradation and illegal exploitation of natural resources, and in areas undergoing the adverse effects of climate change.[3] Following the end of the Cold War era, the roles of POs have also evolved from simply monitoring ceasefires and controlling buffer zones (e.g. the UN Truce Supervision Organization and UN Military Observer Group in India and Pakistan) to addressing non-traditional security challenges such as illegal exploitation of natural resources as part of broader peace efforts.[4] The size of POs and their greater involvement in multidimensional operations might have unintended negative environmental consequences. POs construct bases, extract water, generate electrical power and operate vehicles in their deployment areas; these activities create resource competition, produce waste and hazardous materials, and emit greenhouse gases.[5] Being conscious of this, the International Law Commission (ILC) Principles on Protection of the Environment in Relation to Armed Conflicts (PERAC Principles) include a principle that requires POs established in relation to armed conflicts to consider their environmental impact

1 In this article, the term "peace operations" is used in its broadest sense and covers all forms of military and civilian operations established by the UN in relation to armed conflicts. See UNSC Res. 2594, 9 September 2021, Preamble (POs as peacekeeping operations and special political missions).

2 UN General Assembly, *Report of the High-Level Panel on Threats, Challenges and Change: A More Secure World: Our Shared Responsibility*, UN Doc. A/59/565, 2 December 2004, paras 22, 84.

3 See UN Environment Programme (UNEP), UN Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO) and UN Office of the Special Envoy for the Great Lakes, *Experts' Background Report on Illegal Exploitation and Trade in Natural Resources Benefitting Organized Criminal Groups and Recommendations on MONUSCO's Role in Fostering Stability and Peace in Eastern DR Congo*, Final Report, 15 April 2015; Agathe Sarfati, *Toward an Environmental and Climate-Sensitive Approach to Protection in UN Peacekeeping Operations*, International Peace Institute, 2022, pp. 6–7; Farah Hegazi, Florian Krampe and Elizabeth Smith, *Climate-Related Security Risks and Peacebuilding in Mali*, Stockholm International Peace Research Institute (SIPRI), 2021, pp. 1–2.

4 See Oli Brown, *Peace Operations and the Challenges of Environmental Degradation and Resource Scarcity*, SIPRI Background Paper, 2021, pp. 4–17; Sophie Ravier, Anne-Cecile Vialle, Russ Doran and John Stokes, "Environmental Experiences and Developments in United Nations Peacekeeping Operations", in Carl Bruch, Carroll Muffett and Sandra Nichols (eds), *Governance, Natural Resources and Post-Conflict Peacebuilding*, Routledge, Abingdon, 2016, pp. 195–197.

5 See UN Department of Operational Support (DOS), "Environment", available at: https://operationalsupport.un.org/en/environment (all internet references were accessed in August 2023); Lucile Maertens and Malkit Shoshan, *Greening Peacekeeping: The Environmental Impact of UN Peace Operations*, International Peace Institute, 2018, pp. 4–7.

and to "take, as appropriate, measures to prevent, mitigate and remediate the harm to the environment resulting from [their] operations".[6]

This article argues that UN POs established in relation to armed conflicts have the obligation to prevent, mitigate and remediate the environmental harm that results from their operations.[7] The UN acknowledges the need to comprehensively address the environmental impacts of POs.[8] Examples of such recognition include adopting the 2009 Environmental Policy for UN Field Missions (2009 Environmental Policy), covering key areas such as waste, energy, water, hazardous substances, and cultural and historical resources management.[9] The UN Secretary-General started considering the environmental footprint of POs[10] and, in 2007, launched the "Greening of the Blue" initiative.[11] In 2015, the High-level Independent Panel on Peace Operations (HIPPO) affirmed the concept of "responsible presence" of POs, recognizing the need to minimize their environmental impacts, and emphasized the need to implement the 2009 Environmental Policy effectively.[12] The General Assembly's Special Committee on Peacekeeping Operations (C-34) has further underscored the cruciality of sound environmental management and environmentally responsible solutions.[13] In line with this, in 2016, the UN Department of Operational Support (DOS) initiated a multi-year strategy to build "responsible missions" that operate at

6 ILC, *Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries*, UN Doc. A/77/10, 2022 (PERAC Principles), Principle 7.

7 See *ibid*., Principle 7; UN Department of Peace Operations/Department of Operational Support (DPO/DOS), *United Nations Environmental Management Handbook for Military Commanders in UN Peace Operations*, 1st ed., March 2021 (Environmental Management Handbook), p. 7. See also Florian Krampe, *Why United Nations Peace Operations Cannot Ignore Climate Change*, SIPRI, 22 February 2021; Annica Waleij, "Environmental Considerations in Peace Operations", *Journal of the Institution of Environmental Sciences*, Vol. 29, No. 2, 2020; Mathilde Leloup and Lucile Maertens, "The Material Impact of Peace Operations on the Environment and Cultural Heritage", in Han Dorussen (ed.), *Handbook on Peacekeeping and International Relations*, Edward Elgar, Cheltenham, 2022, pp. 271–275.

8 See e.g. UN Security Council, "Security Council Press Statement on Environmental Management of Peacekeeping Operations", SC/13134-ENV/DEV/1830-PKO/700, 21 December 2017; *Report of the Secretary-General: Implementation of the Recommendations of the Special Committee on Peacekeeping Operations*, UN Doc. A/76/505, 2 November 2021, para. 9.

9 See UN Department of Peacekeeping Operations/Department of Field Support (UN DPKO/DFS), *Environmental Policy for UN Field Missions*, Ref. 2009.6, 1 June 2009 (2009 Environmental Policy); UN Secretary-General, *Secretary-General's Bulletin on the Environmental Policy for the United Nations Secretariat*, ST/SGB/2019/7, 4 September 2019; UN DPO/DFS, *Waste Management Policy for UN Field Missions*, 2018.14, November 2019; UN DOS, *Environment Strategy for Field Missions*, October 2019 (2019 Environment Strategy); Environmental Management Handbook, above note 7.

10 UN General Assembly, *Report of the Secretary-General: Third Annual Progress Report on the Implementation of the Global Field Support Strategy*, UN Doc. A/67/633, 12 December 2012, para. 17.

11 See Greening the Blue, "History of Greening the UN", available at: www.greeningtheblue.org/history-greening-un; M. Leloup and L. Maertens, above note 7, p. 271.

12 UN General Assembly and UN Security Council, *Report of the High-Level Independent Panel on Peace Operations on Uniting Our Strengths for Peace: Politics, Partnership and People*, UN Doc. A/70/95–S/2015/446, 17 June 2015 (HIPPO), paras 292–294.

13 UN General Assembly, *Report of the Special Committee on Peacekeeping Operations*, UN Doc. A/75/19, 17 March 2021, para. 44. See also Declaration of Shared Commitments on the Action for Peacekeeping (A4P) Initiative, March 2018, para. 23.

minimum risk to people and ecosystems.[14] Moreover, some POs have established environmental units that develop and implement mission-specific environmental policies and oversee compliance.[15] The UN Office of Internal Oversight Services (OIOS) has also started conducting assessments of the adequacy and effectiveness of environmental action plans and systems to ensure the efficient use of natural resources and reduce environmental risks linked to the activities of POs.[16]

Against this backdrop, the present article examines the potential sources of environmental obligations of POs that are established in relation to armed conflict. First, the article highlights the customary principles of international environmental law (IEL) that POs deployed in relation to armed conflict must follow. Second, it delves into POs' environmental obligations under the UN's internal rules and the host State's laws. Third, it examines the environmental obligations of POs as enshrined in their mandates. These three sections highlight the relevance and application of these obligations in armed conflict. Lastly, the article addresses the obligations of POs to protect the natural environment under international humanitarian law (IHL). There are other customary law rules, such as those relating to responsibility for internationally wrongful acts, as well as a range of human rights provisions, that are relevant to POs and the protection of the environment;[17] this article does not, however, discuss in detail the international responsibility or human rights obligations of POs.

Customary international environmental law and peace operations

With distinct will and "immediate submission" to the international legal order, the UN has international legal personality.[18] As an entity with a legal personality, the UN has

14 See UN Peacekeeping, "Environmental Risk and Performance Management", available at: https://peacekeeping.un.org/en/environmental-risk-and-performance-management; UNGA Res. 76/274, 29 June 2022, paras 83, 84; 2019 Environment Strategy, above note 9; UN DPO/DFS, *Environmental Policy for Peacekeeping Operations and Field-Based Special Political Missions*, Ref. DOS/2022.01, 1 April 2022 (2022 Environmental Policy), para. 11.

15 UN General Assembly and UN Security Council, *The Future of United Nations Peace Operations: Implementation of the Recommendations of the High-Level Independent Panel on Peace Operations: Report of the Secretary-General*, UN Doc. A/70/357–S/2015/682, 2 September 2015, para. 129; 2009 Environmental Policy, above note 9, p. 7.

16 See OIOS, *Audit of Implementation of the Environmental Action Plan in the United Nations Mission in the Republic of South Sudan*, 2019/079, 27 August 2019, pp. 5–6; OIOS, *Audit of Implementation of Environmental Action Plan in the United Nations Organizational Stabilization Mission in the Democratic Republic of the Congo*, 2019/075, 22 August 2019, pp. 5–6.

17 See Pierre-Marie Dupuy, Ginevra Le Moli and Jorge E. Viñuales, "Customary International Law and the Environment", in Lavanya Rajamani and Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law*, Oxford University Press, Oxford, 2021, p. 393; UNEP, *Protecting the Environment during Armed Conflict: An Inventory and Analysis of International Law*, Nairobi, 2009, p. 40; Mara Tignino and Öykü Irmakkesen, "Water in Peace Operations: The Case of Haiti", *Review of European, Comparative and International Environmental Law*, Vol. 20, No. 1, 2020, p. 33. See also UN Human Rights Council (HRC), *Human Rights and Access to Safe Drinking Water and Sanitation*, UN Doc. A/HRC/RES/15/9, 6 October 2010; HRC, *The Human Right to a Clean, Healthy and Sustainable Environment*, UN Doc. A/HRC/RES/48/13, 8 October 2021.

18 See Giovanni Distefano, *Fundamentals of Public International Law: A Sketch of the International Legal Order*, Brill Nijhoff, Leiden, 2019, pp. 54–57.

rights and obligations under international law. Oppenheim opined that international responsibility is a consequence of international legal capacity or personality.[19] As asserted by the International Law Association, "power entails accountability that is the duty to account for its exercise".[20] In the *Reparation for Injuries* case, the International Court of Justice (ICJ) introduced the notions of functions developed in practice to determine the scope of rights and obligations.[21] It follows that in addition to what is indicated in its constitutive instrument, the scope of the UN's obligations is determined by its functions as they have evolved over time through practice.[22]

Under international law, the principle of speciality governs international organizations (IOs) – i.e., "they are invested by the States which create them with powers, the limits of which are a function of the common interests whose promotion those States entrust to them".[23] This principle, however, does not help to precisely determine which customary principles of international law apply to IOs.[24] The problem is compounded by the absence of a complete theory of international law sources for IOs, as international law instruments do not usually address IOs as their subjects. Nevertheless, it is generally accepted that the UN is bound by a complex mix of customary international law, international agreements, mandates, internal rules, directives and regulations, and universally accepted standards.[25] As a subsidiary body of the UN, POs are required to respect the relevant obligations emanating from these sources.

The protection of the environment is governed by a growing body of law that includes treaties, customary law, general principles of law, national legislation and judicial precedents.[26] The UN and its POs are bound by

19 See Lassa Oppenheim, *International Law: A Treatise*, Vol. 1: *Peace*, 8th ed., ed. Hersch Lauterpacht, Longmans, Green & Co., London, 1955, pp. 261–262.

20 International Law Association (ILA), *Final Report of the Committee on the Accountability of International Organizations*, Berlin Conference, 2004.

21 ICJ, *Reparation for Injuries Suffered in the Service of the United Nations*, Advisory Opinion, *ICJ Reports 1949*, pp. 178–182.

22 See Carla Ferstman, *International Organizations and the Fight for Accountability: The Remedies and Reparations Gap*, Oxford University Press, Oxford, 2017, p. 42; and see Terry D. Gill, Dieter Fleck, William H. Boothby and Alfons Vanheusden (eds), *Leuven Manual on the International Law Applicable to Peace Operations*, Cambridge University Press, Cambridge, 2017 (Leuven Manual), p. 37.

23 ICJ, *Legality of the Use by a State of Nuclear Weapons in Armed Conflict*, Advisory Opinion, *ICJ Reports 1996*, para. 25.

24 See Scott Sheeran, "A Constitutional Moment? United Nations Peacekeeping in the Democratic Republic of Congo", *International Organizations Law Review*, Vol. 8, No. 1, 2011, p. 115; Jan Klabbers, "Sources of International Organizations' Law: Reflections on Accountability", in Samantha Besson and Jean d'Aspremont (eds), *The Oxford Handbook of the Sources of International Law*, Vol. 1, Oxford University Press, Oxford, 2018, p. 988.

25 See ICJ, *Reparation for Injuries*, above note 21, p. 179; ICJ, *Interpretation of the Agreement of March 1951 between the WHO and Egypt*, Advisory Opinion, *ICJ Reports 1980*, para. 37; ILA, above note 20, pp. 18–25; Dieter Fleck, "The Law Applicable to Peace Operations", in Andrew Clapham and Paola Gaeta (eds), *The Oxford Handbook of International Law in Armed Conflict*, Vol. 1, Oxford University Press, Oxford, 2014; Kristina Daugirdas, "How and Why International Law Binds International Organizations", *Harvard International Law Journal*, Vol. 57, No. 2, 2016, p. 327.

26 For an overview of such sources, see UNEP, above note 17, pp. 34–43; see also ILC, *Preliminary Report on the Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/674, 30 May 2014, paras 117–156. On existing IHL obligations relating to the protection of the natural environment in armed conflict, see International Committee of the Red Cross (ICRC), *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law, with Commentary*, Geneva, 2020 (ICRC Guidelines).

customary principles of IEL, internal rules and other relevant obligations emanating from host State legislation. While there may be ongoing discussions regarding the status of certain principles of IEL, the principles of precaution, prevention and sustainability have already achieved customary law status.[27] The precautionary and prevention principles have been included in several treaties and are recognized in case law and soft-law instruments.[28] These principles require conducting an environmental impact assessment aimed at assessing the risk of environmental harm in order to stop and/or mitigate such harm.[29] The prevention principle is described as "the fundamental tenet on which international environmental law rests".[30] The principle of precautions supplements the preventive principle; it denotes that whenever there is a threat of serious or irreversible damage, lack of scientific certainty shall not justify failure to take measures to prevent environmental degradation.[31] According to the International Committee of the Red Cross's (ICRC) on Customary Law Study, the lack of scientific certainty regarding the effects of certain military operations on the environment does not absolve warring parties from taking proper precautionary measures to prevent undue damage as required by IHL. The environmental law precautionary principle is particularly relevant for the protection of the natural environment during the planning of an attack, as there is likely to be some uncertainty regarding environmental impacts.[32] The significance of this principle lies in the fact that it enables regulating some measures that could significantly harm the environment in the long term, even if there is currently no scientific certainty about their effects. The environmental law principle of sustainability requires taking into account social, economic and environmental factors and incorporating a multi-generational standard of care in order to address current needs, while enhancing the ability of future generations to meet their needs.[33] It feeds into the overarching theme of protecting the environment and requires considering both the short- and long-term consequences of actions.

These customary IEL principles hold significance for POs in regulating their environmental footprint and their broader endeavours to safeguard the

27 See UNEP, above note 17, p. 40; ILC, above note 26, paras 150–156. See also Kirsten Stefanik, "The Environment and Armed Conflict: Employing General Principles to Protect the Environment", in Carsten Stahn, Jens Iverson and Jennifer S. Easterday (eds), *Environmental Protection and Transitions from Conflict to Peace*, Oxford University Press, Oxford, 2017, pp. 93–118; P. Dupuy, G. Le Moli and J. Viñuales, above note 17, pp. 385–401.

28 For a reference to such sources, see Mara Tignino and Tadesse Kebebew, "The Legal Protection of Freshwater Resources and Related Installations during Warfare", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022, p. 1200.

29 See ILC, above note 26, paras 150–153; P. Dupuy, G. Le Moli and J. Viñuales, above note 17, pp. 396–398.

30 ILC, above note 26, para. 133.

31 Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26, 12 August 1992 (Rio Declaration), Principle 15. For a discussion on the content and legal status of the principle, see K. Stefanik, above note 27, pp. 107–113; Jacqueline Peel, "Precaution", in L. Rajamani and J. Peel (eds), above note 17, pp. 302–318.

32 ICRC Guidelines, above note 26, para. 124.

33 See ILC, above note 26, paras 125–132; K. Stefanik, above note 27, pp. 104–106; M. Tignino and T. Kebebew, above note 28, p. 1208.

environment. Principles, standards and mechanisms in soft-law instruments related to IEL that do not reach the level of customary law remain relevant in informing the "interpretation and application of international law".[34] While it is generally accepted that principles of IEL must be considered in situations of armed conflict, there is an ongoing debate about the extent to which they apply in conjunction with IHL.[35] In this regard, the ILC takes the position that both treaty and customary IEL continue to apply during armed conflict as long as they are not incompatible with IHL.[36] For instance, PERAC Principle 13 stipulates that "the environment shall be respected and protected in accordance with applicable international law and, in particular, the law of armed conflict". Similarly, Principle 3, dealing with "Measures to Enhance the Protection of the Environment", covers obligations "under international law", including "relevant treaty-based or customary obligations related to the protection of the environment before, during, or after an armed conflict", regardless of whether they derive from IEL or other branches of international law.[37] Given these developments, POs must observe at least those principles of IEL that have attained customary law status during armed conflicts.

Environmental obligations under "internal rules" of the UN and host State laws

Under the UN Charter, maintaining international peace and security, promoting human rights and higher standards of living and ensuring socio-economic development are among the core objectives of the UN. These overarching themes guide the activities of POs; in addition, internal rules and regulations form essential sources of obligations for the UN and POs. In its Draft Articles on the Responsibility of International Organizations (DARIO), the ILC stated that most obligations incumbent on IOs arise from the "rules of the organization".[38]

34 Michael Bothe, Carl Bruch, Jordan Diamond and David Jense, "International Law Protecting the Environment during Armed Conflict: Gaps and Opportunities", *International Review of the Red Cross*, Vol. 92, No. 879, 2010, p. 584.

35 See ICRC Guidelines, above note 26, paras 30–36; Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), Rule 44, available at: https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1; M. Bothe *et al.*, above note 34, pp. 584–586, 588–589; Michael Bothe, "Precaution in International Environmental Law and Precautions in the Law of Armed Conflict", *Göttingen Journal of International Law*, Vol. 10, No. 1, 2020.

36 See PERAC Principles, above note 6, Principle 13, para. 4.

37 *Ibid.*, Principle 3, para. 4.

38 ILC, *Draft Articles on the Responsibility of International Organizations, with Commentaries*, UN Doc. A/66/10, 2011 (DARIO), Art. 2(b). "Rules of the organization" means, "in particular, the constituent instruments, decisions, resolutions and other acts of the international organization adopted in accordance with those instruments, and established practice of the organization".

However, the ILC did not clarify the legal nature of such rules.[39] This issue is not yet settled, and the fact that the C-34 once requested "clarification" on the legal status of the 1999 UN *Secretary-General's Bulletin on the Observance by UN Forces of International Humanitarian Law* (1999 Secretary-General's Bulletin) epitomizes this.[40] Nevertheless, from the readings of some provisions of the DARIO, one can infer that the ILC considers the "rules of the organisation" as sources of obligations. For example, Article 6(2) of the DARIO states that the "rules of the organization apply in the determination of the functions of its organs and agents", while Article 10(2) refers to "the breach of any international obligation that may arise for an international organization towards its members under the rules of the organization". Similarly, the *Leuven Manual on the International Law Applicable to Peace Operations* (Leuven Manual) indicates that "POs shall be conducted in accordance with the UN Charter, their internal rules and procedures, and other rules of international law applicable to them".[41] Moreover, an expert from the UN's Office of Legal Affairs once pointed out that "instructions" promulgated by the UN Secretary-General are binding because they reflect customary law.[42] Furthermore, the internal rules established in accordance with accepted procedures of IOs have also been considered as "unilateral acts" comparable to binding unilateral acts of States.[43]

Regarding the protection of the environment, the *UN Environmental Management Handbook for Military Commanders in UN Peace Operations* (Environmental Management Handbook) indicates that "environmental management standards and obligations are set out in a range of UN mandates, rules, policies, procedures and guidelines, as well as national (host country) laws and regulations".[44] One such instrument is the 1999 Secretary-General's Bulletin, which restates a few emblematic IHL norms into "the UN peacekeeping law"[45] and prohibits, for instance, UN forces from employing methods of warfare "which are intended, or may be expected to cause, widespread, long-term and

39 See *ibid*., Art. 5, commentary para. 2, and Art. 10, commentary para. 7; International Law Discussion Group, *Legal Responsibility of International Organisations in International Law: Summary of the International Law Discussion Group Meeting*, Chatham House, London, 10 February 2011, p. 3.

40 UN General Assembly, *Comprehensive Review of the Whole Question of Peacekeeping Operations in All Their Aspects: Report of the Special Committee on Peacekeeping Operations*, UN Doc. A/54/839, 20 March 2000, paras 29, 82.

41 Leuven Manual, above note 22, p. 35. See also Henry Schermers and Niels Blokker, *International Institutional Law*, 6th ed., Brill Nijhoff, Leiden, 2018, pp. 758–759 (UN adopts broad rules governing POs that are "similar to national laws on armed forces").

42 See Larry Maybee and Benarji Chakka (eds), *Custom as a Source of International Humanitarian Law: Proceedings of the Conference to Mark the Publication of the ICRC Study "Customary International Humanitarian Law"*, ICRC, New Delhi, 2005, pp. 246–248.

43 See Marten Zwanenburg, "United Nations and International Humanitarian Law", *Max Planck Encyclopedia of Public International Law*, October 2015, para. 12. Cf. ILC, *Guiding Principles Applicable to Unilateral Declarations of States Capable of Creating Legal Obligations, with Commentaries Thereto*, UN Doc. A/61/10, 2006, para. 177.

44 Environmental Management Handbook, above note 7, p. 14.

45 See Nigel White, "Peacekeeping Doctrine: An Autonomous Legal Order?", *Nordic Journal of International Law* Vol. 88, No. 1, 2019, p. 107.

severe damage to the natural environment".[46] Though some scholars indicate that "the Bulletin has the status of a statement of policy",[47] most agree that the Bulletin is binding because it represents either a unilateral act or an administrative issuance with legal effect on UN forces, or the restatement of customary IHL.[48] In addition, the Code of Personal Conduct for Blue Helmets also includes a commitment to "[s]how respect for and promote the environment … of the host country".[49] Such internal regulations, along with the Environmental Policy for Peacekeeping Operations and Field-Based Special Political Missions (2022 Environmental Policy) and its related guidelines, must be upheld by POs.[50]

The rights and duties of POs are primarily determined at the international level, including through mandates and internal procedures and guidelines. However, this does not exclude the applicability of domestic legislation of host and sending States. In fact, POs are required to respect obligations emanating from the laws of the host State and sending States.[51] The UN Model Status of Forces Agreement (SOFA) confirms the obligation to respect the host State's laws, which include environmental laws.[52] Besides, in a resolution adopted by the UN General Assembly, POs are asked to reduce their environmental footprint "through the implementation of environmentally responsible waste management and power generation systems, also working towards a potential positive legacy for host communities, in full compliance with the relevant regulations and rules".[53]

POs are subject to the host State's laws – provided that they are compatible with international law and the SOFA – while present or carrying out activities within its territory.[54] They shall "act in conformity with all relevant and applicable rules of international law and [shall] respect host State law in so far as it is compatible with international law and with the mandate".[55] Correspondingly, the *United Nations Environmental Management Handbook for Military*

46 UN Secretary-General, *Secretary-General's Bulletin: Observance by United Nations Forces of International Humanitarian Law*, ST/SGB/1999/13, 1999 (1999 Secretary-General's Bulletin), section 6.3.

47 See Leuven Manual, above note 22, p. 153.

48 See Daphna Shraga, "The Secretary-General's Bulletin on the Observance by the United Nations Forces of International Humanitarian Law: A Decade Later", *Israel Yearbook on Human Rights*, Vol. 39, 2009, p. 360; M. Zwanenburg, above note 43; Ray Murphy and Siobhán Wills, "United Nations Peacekeeping Operations", in Andre Nollkaemper, Ilias Plakokefalos and Jessica Schechinger (eds), *The Practice of Shared Responsibility in International Law*, Cambridge University Press, Cambridge, 2018, p. 591.

49 United Nations, *Code of Personal Conduct for Blue Helmets*, 1999, Rules 1, 8.

50 See 2022 Environmental Policy, above note 14; O. Brown, above note 4; L. Maertens and M. Shoshan, above note 5.

51 See Leuven Manual, above note 22, pp. 84, 130–138.

52 UN General Assembly, *Model Status-of-Forces Agreement for Peacekeeping Operations*: *Report of the Secretary-General*, UN Doc. A/45/594, 9 October 1990, para. 6.

53 See UNGA Res. 76/274, 29 June 2022, para. 83.

54 See UN DPKO/DFS, *United Nations Peacekeeping Operations: Principles and Guidelines*, 2008 (Capstone Doctrine), pp. 81–82; Leuven Manual, above note 22, pp. 130–134; Andrés B. Muñoz Mosquera, "Respect for the Law of the Receiving State", in Dieter Fleck (ed.), *The Handbook of the Law of Visiting Forces*, 2nd ed., Oxford University Press, Oxford, 2018.

55 Leuven Manual, above note 22, p. 31.

Commanders in UN Peace Operations (Environmental Management Handbook) provides "practical guidance for commanders when planning and implementing environmental management actions" in POs throughout the mission lifecycle, and "highlights the environmental degradation preventive measures which should be integrated into the planning and execution of any military operation". As such, the Handbook, which is also relevant during armed conflicts, specifies that UN forces shall

> respect the environment and relevant environmental laws of the host country and comply with United Nations environmental and waste management policies and procedures, including Mission environmental standards, policies and SOPs [Standard Operating Procedures] on waste management, water and wastewater management, energy management, pollution prevention, and other environmental aspects.[56]

This indicates that POs shall respect environmental and human rights laws incorporated under such legislation, such as the rights to life, food, water, health and the environment. As reflected in the document *UN Peacekeeping Operations: Principles and Guidelines* (Capstone Doctrine), human rights law is a crucial part of the UN POs framework.[57] For instance, as the African Charter on Human and Peoples' Rights recognizes the right to the environment as a human right and obliges member States to respect, protect and fulfil it, POs deployed in Africa cannot ignore at least the obligations to respect and protect the environment if these obligations are incorporated into the domestic framework of the States hosting them.[58] The UN may also be held responsible for violations of its environmental obligations.

The internal rules dealing with different aspects of the environmental obligations of POs do not explicitly exclude their applicability during armed conflicts. The 1999 UN Secretary-General's Bulletin confirms specific environmental obligations of POs under IHL. As regards the laws of States hosting POs, non-international armed conflicts (NIACs) do not, in principle, affect the continued applicability of international law obligations of States, including environmental obligations.[59] Thus, as POs are usually deployed in the context of NIACs, they must continue to respect obligations enshrined under the law of States hosting them during armed conflicts.

Moreover, the laws of sending States may become relevant in POs, particularly in the fields of human rights and environmental protection.[60] This includes minimizing environmental footprint, avoiding activities that could cause environmental harm, and taking appropriate measures to control pollution, waste

56 Environmental Management Handbook, above note 7, p. 28.
57 Capstone Doctrine, above note 54, p. 14.
58 African Charter on Human and Peoples' Rights, CAB/LEG/67/3 rev. 5, 21 ILM 58, 27 June 1981, Art. 24.
59 In relation to the continued application of IEL treaties during NIACs, see M. Bothe *et al.*, above note 34, p. 581.
60 See Leuven Manual, above note 22, pp. 135–136; Dieter Fleck, "Legal Protection of the Environment", in C. Stahn, J. Iverson and J. S. Easterday (eds), above note 27, p. 217.

and hazardous substances.[61] Doing so is also fundamental to earning the trust and support of local communities.

The protection of the environment in the mandates of peace operations

POs are commonly deployed upon receiving a mandate from the UN Security Council outlining the specific tasks that they are expected to carry out. The mandate serves as the legal basis for a PO and "defines the objectives and legal and operational parameters that govern the operation".[62] Despite mounting doubts regarding the efficacy of multidimensional mandates, the scope of tasks entrusted to POs has expanded to encompass a range of cross-cutting and thematic issues.[63] The content of each mandate varies depending on the nature of the agreement reached by the conflicting parties as well as the challenges present in the deployment area. The Capstone Doctrine highlights that while each PO is unique, there is a significant degree of consistency in the types of mandated tasks.[64]

There is acknowledgement of the importance of comprehensively addressing the effects of environmental degradation to guarantee long-term peace.[65] In this context, as the UN Environment Programme (UNEP) indicates, POs have an "evolving and fundamental role".[66] At the Security Council level, there is an emerging recognition of the "inextricable link between the protection of the environment and the protection of civilians" as environmental degradation directly impacts the security and livelihood of civilians, possibly leading to displacement and violence.[67] In light of this, one can argue that protecting the environment *is* protecting the civilian population, and that the two dimensions therefore go hand in hand.

The Security Council has long recognized the critical importance of assessing and mitigating the environmental impact of POs.[68] It has started inserting environment- and climate-related language (e.g. natural resources,

61 See UN General Assembly, *Manual on Policies and Procedures Concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions*, UN Doc. A/C.5/69/18, 20 January 2015, pp. 193–194.

62 Leuven Manual, above note 22, p. 27.

63 Capstone Doctrine, above note 54, pp. 23–24.

64 *Ibid*., p. 16.

65 See UNSC Res. 1625, 14 September 2005, Preamble (addressing the Security Council's role in conflict prevention, particularly in Africa); UNSC Res. 2349, 31 March 2017, paras 22–28; UNSC Res. 2463, 29 March 2019, paras 3, 15; UNSC Res. 2666, 20 December 2022, para. 3; UN Security Council, above note 8; UN General Assembly, above note 13, para. 79.

66 See UNEP, *Greening the Blue Helmets: Environment, Natural Resources and UN Peacekeeping Operations*, Nairobi, 2012. See also Thomas Vervisch, Emery Mudinga and Godefroid Muzalia, *MONUSCO's Mandate and the Climate Security Nexus*, Policy Brief, available at: www.gicnetwork.be/policy-brief-monuscos-mandate-and-the-climate-security-nexus/.

67 A. Sarfati, above note 3, p. 6. See also UN Security Council, *Protection of Civilians in Armed Conflict: Report of the Secretary-General*, UN Doc. S/2021/423, 3 May 2021; UN Security Council, *Protection of Civilians in Armed Conflict: Report of the Secretary-General*, UN Doc. S/2022/381, 10 May 2022.

68 For the list of the relevant resolutions, see UN Security Council, above note 8.

climate change, protection of cultural heritage sites and sustainable development) in the mandates of POs, requiring them to seriously consider the environmental impacts of their operations.[69] For example, the Security Council has requested the Secretary-General to examine the environmental impacts of the Multidimensional Integrated Stabilization Mission in Mali (MINUSMA) and to encourage the mission to operate mindfully in the vicinity of cultural and historical sites – from which the natural environment benefits.[70] MINUSMA was requested to consider the environmental impacts of its operations in accordance with applicable and relevant General Assembly resolutions and UN rules and regulations, and to implement the UN DOS's Environment Strategy (Phase II).[71]

In addition to addressing their own environmental footprint, some POs are mandated to support host States in ensuring proper administration and tackling illegal exploitation of natural resources.[72] The UNSC explicitly requires some POs to conduct environmental risk assessments and address the potential impact of climate change and other ecological factors in the mandate areas.[73] For instance, the United Nations Mission in South Sudan (UNMISS) was requested to assess the impacts of climate change.[74] As part of its broader peacebuilding efforts, the UNSC mandates POs to assist host States in responsibly and sustainably managing natural resources and addressing root causes of conflict, such as environmental degradation.[75] The 2022 Environmental Policy provides that "when mandated to do so, police components shall provide operational support and/or capacity building and development assistance to host-Government counterparts in enforcing local, national, regional and international law and

69 See e.g. UNSC Res. 2612, 20 December 2021, para. 45; UNSC Res. 2640, 29 June 2022, paras 53–54; UNSC Res. 2347, 24 March 2017, para.19. See also A. Sarfati, above note 3, pp. 11–15; UN DOS, "DOS Environment Strategy for Peace Operations", available at: https://operationalsupport.un.org/sites/default/files/dos_environment_strategy_execsum_phase_two.pdf; 2022 Environmental Policy, above note 14, para. 41.

70 UNSC Res. 2100, 25 April 2013, paras 16, 32 (support for preservation of cultural and historical sites).

71 See UNSC Res. 2640, 29 June 2022, paras 53, 54.

72 UNSC Res. 2666, 20 December 2022, para. 24(j); UNSC Res. 2217, 28 April 2015, paras 33(c), 34(c); UNSC Res. 2211, 26 March 2015, paras 15(g), 23; UNSC Res. 1509, 19 September 2003, para. 3(r). See also UN Security Council, "Maintenance of International Peace and Security: Natural Resources and Conflict: Statement by the President of the Security Council", UN Doc. S/PRST/2007/22, 25 June 2007; UNEP, *Environmental Cooperation for Peacebuilding Programme*, Nairobi, 2016, pp. 20–35; UNEP, above note 66, pp. 9–10.

73 OIOS, *Audit of Implementation of the Environmental Action Plan in the United Nations Multidimensional Integrated Stabilization Mission in the Central African Republic*, 2019/053, 25 June 2019; UN General Assembly, *Manual on Policies and Procedures Concerning the Reimbursement and Control of Contingent-Owned Equipment of Troop/Police Contributors Participating in Peacekeeping Missions*, UN Doc. A/75/121, 2020, pp. 4, 10, 46. See also L. Maertens and M. Shoshan, above note 5, p. 13; UN Security Council, *The UN Security Council and Climate Change: Tracking the Agenda after the 2021 Veto*, Research Report No. 4, 30 December 2022, pp. 5–6; Daniel Forti and Emmanuelle Cousin, *Contingent-Owned Equipment and Environmental Considerations in UN Peacekeeping Operations*, Issue Brief, International Peace Institute, 2022.

74 UNSC Res. 2625, 15 March 2022, para. 3(b) and Preamble.

75 See e.g. UNSC Res. 2640, 29 June 2022, Preamble, paras 18, 26(b)(i), 54; UNSC Res. 2659, 14 November 2022, Preamble, para. 35(b)(v). See also UN Security Council, above note 73, p. 3; UNEP, *Environmental Cooperation*, above note 72, pp. 20–29.

regulations pertaining to the protection of the environment".[76] This includes, for example, facilitating dialogue between communities to promote equitable use of resources, managing resettlement operations, building national capacity to address environmental challenges, and promoting environmentally friendly projects.

Regarding the question of whether environmental obligations under the mandates of POs continue to apply during armed conflict, including when a PO becomes a party to an armed conflict, the ILC seems to answer it affirmatively by underscoring that "the environmental impact of a peace operation may stretch from the planning phase through its operational part, to the post-operation phase".[77] The requirements to "consider the impact" and "take, as appropriate, measures" are meant to apply throughout this time. However, the ILC simultaneously indicates that "measures to be taken may differ depending on the context of the operation" – i.e., "whether such measures relate to the pre-, in-, or post-armed conflict phase, and what measures are feasible under the circumstances".[78]

Generally, the Security Council recognizes the role of tackling natural resources, climate-related and environmental challenges in the preservation of peace and security. Given the importance of protecting the environment, consistent and systematic integration of climate security issues into the mandates of POs is critical to translating environmental concerns into action on the ground. For instance, the Security Council mandated the UN Special Political Mission in Somalia to carry out a climate risk assessment to evaluate the risks of drought and scarcity of water as part of its efforts to address the complexities of the climate–peace–security nexus.[79]

The preceding sections have addressed the environmental obligations of POs under customary IEL, as well as under the internal rules of the UN, the laws of the host State, and mandates from the Security Council, including during armed conflicts. The following section covers the obligation of POs to protect the natural environment stemming from IHL.

Environmental obligations of POs under IHL

Consent, impartiality and non-use of force are the three core principles underpinning POs, but POs may relate to armed conflict in multiple ways. Sometimes, POs are mandated to use varying degrees of force to neutralize armed groups and operate alongside State forces, to support State authority, to establish the rule of law, and to prevent attacks on themselves and those they are

76 2022 Environmental Policy, above note 14, para. 41.
77 PERAC Principles, above note 6, Principle 7, para. 5.
78 *Ibid.*
79 See UNSC Res. 2461, 27 March 2019, Preamble, para. 21. For a discussion on the role of POs in Somalia, see Jenna Russo, *The UN Environmental and Climate Adviser in Somalia*, International Peace Institute, 2022.

mandated to protect.[80] In situations where POs are involved in an armed conflict, they may become parties to the conflict if the classic conditions for the application of IHL are met.[81] While the application of IHL to UN forces may be the subject of legal and political debate,[82] it is evident that the UN recognizes its responsibilities under IHL. In addition, on numerous occasions the UN has accepted its due diligence obligation to ensure respect for IHL by parties to armed conflicts, including armed non-State actors.[83] This section examines the obligation to protect the natural environment, both when POs are involved in an armed conflict and when they are not. Generally, the extent of the environmental law obligations of POs depend on the specific circumstances in which they operate, the types of functions entrusted to them and whether they are a party to an armed conflict or not.

When a PO is a party to an armed conflict

POs could be involved in hostilities that can trigger the application of IHL.[84] In such cases, as indicated under the 1999 UN Secretary-General's Bulletin, the Capstone Doctrine and the UN Convention on the Safety of United Nations and Associated Personnel, UN forces must observe the principles and rules of IHL.[85] Commentators also agree that POs can engage in activities that could make them a party to an armed conflict,[86] and, when involved in an armed conflict, POs

80 See Alexander Gilder, "The Effect of 'Stabilization' in the Mandates and Practice of UN Peace Operations", *Netherlands International Law Review*, Vol. 66, No. 1, 2019, p. 47.

81 See Arts 2 and 3 common to the four Geneva Conventions.

82 For a summary of the relevant positions and arguments, including those of the United Nations, see Daphna Shraga, "The United Nations as an Actor Bound by International Humanitarian Law", *International Peacekeeping*, Vol. 5, No. 2, 1998; Tristan Ferraro, "The Applicability and Application of International Humanitarian Law to Multinational Forces", *International Review of the Red Cross*, Vol. 95, No. 891–892, 2013; Marco Sassòli, *International Humanitarian Law: Rules, Controversies, and Solutions to Problems Arising in Warfare*, Edward Elgar, Cheltenham, 2019, pp. 468–475.

83 See Nigel White, "In Search of Due Diligence Obligations in UN Peacekeeping Operations: Identifying Standards for Accountability", *Journal of International Peacekeeping*, Vol. 23, No. 3–4, 2020, pp. 220–221; Haidi Willmot and Scott Sheeran, "The Protection of Civilians Mandate in UN Peacekeeping Operations: Reconciling Protection Concepts and Practices", *International Review of the Red Cross*, Vol. 95, No. 891–892, 2013, pp. 527–528.

84 See ICRC, *Commentary on the Third Geneva Convention: Convention (III) relative to the Treatment of Prisoners of War*, 2nd ed., Geneva, 2020 (ICRC Commentary on GC III), Art. 2, paras 278–89, 367–375, and Art. 3, paras 445–447.

85 1999 Secretary-General's Bulletin, above note 46; Capstone Doctrine, above note 54, p. 15; Convention on the Safety of United Nations and Associated Personnel, 2051 UNTS 363, 9 December 1994 (entered into force 15 January 1999), Art. 2(2).

86 See T. Ferraro, above note 82; Daphna Shraga, "UN Peacekeeping Operations: Applicability of International Humanitarian Law and Responsibility for Operations-Related Damage", *American Journal of International Law*, Vol. 94, No. 2, 2000; Katarina Grenfell, "Perspective on the Applicability and Application of International Humanitarian Law: The UN Context", *International Review of the Red Cross*, Vol. 95, No. 891–892, 2013; Devon Whittle, "Peacekeeping in Conflict: The Intervention Brigade, MONUSCO, and the Application of International Humanitarian Law to United Nations Forces", *Georgetown Journal of International Law*, Vol. 46, No. 3, 2015, p. 848; Michael Bothe and Thomas Dorschel, "The UN Peacekeeping Experience", in Dieter Fleck (ed.), *The Handbook of the Law of Visiting Forces*, 1st ed., Oxford University Press, New York, 2001.

must respect and ensure respect for IHL.[87] The UN admits that its forces must observe IHL, though, at times, it claims that it cannot be considered a "party to an armed conflict", "enemy forces" or an "Occupying Power".[88] Such an argument is mainly based on *jus ad bellum* and other policy considerations.[89] Nevertheless, in 1961, during the UN Operation in the Congo, the UN Secretary-General stated that the UN could become a party to an armed conflict (when engaging in hostilities against armed non-State actors).[90] Likewise, Patricia O'Brien, Undersecretary-General for Legal Affairs and Legal Counsel of the UN at the time, confirmed this view.[91] The HIPPO report addressed to the UN Secretary-General equally accepted that UN forces could become a party to an armed conflict.[92]

Whether or not the UN can and should be considered a party to an armed conflict is a topic of some discussion. The ICRC indicates that "depending on the circumstances, the Party or Parties to the conflict may be the troop-contributing countries, the international organization under whose command and control the multinational forces operate, or both".[93] As the POs are subsidiary organs of the UN and are usually under its command and control,[94] in principle, it is the UN (not the troop-contributing countries) that becomes a party to armed conflict. In line with this, the Geneva Academy's Rule of Law in Armed Conflict platform, which qualifies situations of armed conflict using IHL standards, considers the UN Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO), MINUSMA and the UN Multidimensional Integrated Stabilization Mission in the Central African Republic as parties to NIAC.[95]

There is also disagreement among scholars on whether or not the involvement of UN forces automatically "internationalizes" the conflict.[96]

87 See Office of the United Nations High Commissioner for Human Rights, *International Legal Protection of Human Rights in Armed Conflict*, HR/PUB/11/01, New York and Geneva, 2011, pp. 28–30; ICRC Customary Law Study, above note 35, Rule 139; 1999 Secretary-General's Bulletin, above note 46; PERAC Principles, above note 6, Principle 7, para. 3.

88 See Leuven Manual, above note 22, p. 97; Ray Murphy, *UN Peacekeeping in Lebanon, Somalia and Kosovo: Operational and Legal Issues in Practice*, Cambridge University Press, Cambridge, 2009, p. 215; M. Sassòli, above note 82, p. 470.

89 See e.g. ICRC Commentary on GC III, above note 84, paras 278, 368; M. Sassòli, above note 82, pp. 468–475.

90 *Report of Secretary-General on Steps to Implement SC Res. S/4741 (1961)*, UN Doc. S/4752, 27 February 1961, Annex VII, p. 3.

91 Michel Veuthey and Gian Luca Beruto (eds), *Respecting International Humanitarian Law: Challenges and Responses*, International Institute of Humanitarian Law, FrancoAngeli, Milan, 2014, pp. 33–35.

92 HIPPO, above note 12, para. 122.

93 See ICRC Commentary on GC III, above note 84, para. 281.

94 See ILC, *Comments and Observations Received from International Organizations*, UN Doc. A/CN.4/637, February 2011, p. 150.

95 See Geneva Academy of International Humanitarian Law and Human Rights, *RULAC: Rule of Law in Armed Conflict*, available at: www.rulac.org/classification/contemporary-challenges-for-classification. See also Damian Lilly, "The United Nations as a Party to Armed Conflict: The Intervention Brigade of MONUSCO in the Democratic Republic of Congo (DRC)", *Journal of International Peacekeeping*, Vol. 20, No. 3–4, 2016.

96 See Alexandre Faite and Jérémie Labbé Grenier (eds), *Expert Meeting on Multinational Peace Operations: Applicability of International Humanitarian Law and International Human Rights Law to UN Mandated Forces (Geneva, 11–12 December 2003): Report*, ICRC, Geneva, 2004, p. 62; Eric David and Ola Engdahl, "How Does the Involvement of a Multinational Peacekeeping Force Affect the Classification of a Situation?", *International Review of the Red Cross*, Vol. 95, No. 891–892, 2013, pp. 664–665.

However, the ICRC indicates that the same criteria for determining the existence of an armed conflict enshrined in Articles 2 and 3 common to the four Geneva Conventions apply to armed conflicts involving POs.[97] It should also be noted that if a PO provides support to a party involved in a pre-existing NIAC that would directly impact the opposing party's ability to carry out military operations, then the PO will arguably become a party to the conflict.[98]

As a party to an armed conflict, whether IAC or NIAC, POs must respect and ensure respect for the applicable rules of IHL, including those that protect the natural environment.[99] As the UN is not a party to IHL treaties, a PO's environmental law obligations are mainly governed by customary IHL rules protecting the natural environment. In addition, SOFAs signed between the UN and States hosting POs typically require the UN to ensure that its operation is conducted with "full respect for the principles and rules of the international conventions applicable to the conduct of military personnel".[100] The 1999 Secretary-General's Bulletin also specifically affirms the applicability of certain fundamental principles and rules of IHL. Thus, POs must protect the environment in accordance with applicable law, including IHL.

The ICRC's updated *Guidelines on the Protection of the Natural Environment in Armed Conflict* (ICRC Guidelines) provide a comprehensive overview of existing IHL rules protecting the environment.[101] The ICRC Guidelines restate both general and specific protections under IHL and provide a commentary to clarify the source of these and aid interpretation. First, by virtue of its civilian character, the natural environment benefits from both direct and indirect general protection, including under the principles of distinction, proportionality and precaution.[102] In its Advisory Opinion on the *Legality of the Threat or Use of Nuclear Weapons*, the ICJ underscores the importance of considering environmental factors in implementing the principles and rules of the law applicable in armed conflict.[103] As restated in the ICRC Guidelines, these principles on the conduct of hostilities have attained customary law status

97 See ICRC Commentary on GC III, above note 84, paras 280, 447. See also Leuven Manual, above note 22, pp. 93–97; M. Sassòli, above note 82, pp. 471–472; T. Ferraro, above note 82, pp. 580–583.

98 See ICRC Commentary on GC III, above note 84, para. 480; Leuven Manual, above note 22, pp. 102–104; Tristan Ferraro, "The ICRC's Legal Position on the Notion of Armed Conflict Involving Foreign Intervention and on Determining the IHL Applicable to This Type of Conflict", *International Review of the Red Cross*, Vol. 97, No. 900, 2015, pp. 1230–1233; Ralph Mamiya and Tobias Vestner, "Revisiting the Law on UN Peace Operations' Support to Partner Forces", *Journal of Conflict and Security Law*, Vol. 27, No. 2, 2022.

99 See ICRC Guidelines, above note 26, para. 302; Philippe Antoine, "International Humanitarian Law and the Protection of the Environment in Time of Armed Conflict", *International Review of the Red Cross*, Vol. 32, No. 291, 1992.

100 See *The Status of Forces Agreement between the United Nations and the Government of the Republic of South Sudan Concerning the United Nations Mission in South Sudan*, Juba, 8 August 2011, paras 6(a)–(b). The ICRC indicates that this has been the practice since the mid-1990s: see ICRC Commentary on GC III, above note 84, fn. 248.

101 ICRC Guidelines, above note 26. However, it should be noted that whether and how certain IHL rules apply to the natural environment is the subject of some debate (see para. 23).

102 See *ibid.*, Rules 5–9; ICRC Customary Law Study, above note 35, Rule 43.

103 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996*, para. 33.

applicable both in IACs and NIACs.[104] Some sources, including UNEP, consider that these principles of IHL "may not be sufficient to limit damage to the environment" in armed conflict.[105] Nevertheless, the ICRC Guidelines have clarified how these principles apply in practice and have noted the relevance of IEL principles to the extent that they are applicable in armed conflict, including considering the precautionary principle in the face of scientific certainty.[106]

The principle of distinction obliges parties to an armed conflict to distinguish between civilian objects and military objectives at all times; it thus entails that "no part of the natural environment may be attacked, unless it is a military objective", and prohibits indiscriminate attacks against the natural environment.[107] The principle of proportionality prohibits attacks "which may be expected to cause incidental damage to the natural environment which would be excessive in relation to the concrete and direct military advantage anticipated".[108] When conducting such assessments, parties to armed conflict must take into account damages that are "not only immediate and direct, but also long-term and indirect, as long as it is foreseeable".[109]

The principle of precaution requires parties to armed conflict (both IAC and NIAC) to take constant care to spare civilian objects, including the environment, in the conduct of military operations. They must therefore take all feasible precautions to avoid or minimize environmental damage.[110] According to the ICRC Guidelines, the obligations under the precautionary principle (Rule 8) also operationalize the general standard of due regard to the protection and preservation of the natural environment.[111] The ICRC Guidelines also underscored that the lack of scientific certainty as to the effects on the natural environment of certain military operations does not absolve parties to the conflict from taking precautions.[112] The 2009 UNEP report on *Protecting the Environment during Armed Conflict* also notes that the ICRC emphasizes the significance of taking a precautionary approach even in the absence of scientific certainty about the likely effects of a particular weapon on the environment.[113] Regarding passive precautions, the ICRC indicates that "parties to the conflict must take all feasible precautions to protect civilian objects under their control,

104 ICRC Guidelines, above note 26, para. 95; ICRC Customary Law Study, above note 35, Rules 43–45.
105 See UNEP, above note 17, p. 52; M. Bothe *et al.*, above note 34, pp. 576–579.
106 See ICRC Guidelines, above note 26, Rule 8, para. 124; ICRC Customary Law Study, above note 35, Rule 44. See also Raphaël van Steenberghe, "The Interplay between International Humanitarian Law and International Environmental Law: Towards a Comprehensive Framework for a Better Protection of the Environment in Armed Conflict", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022, pp. 1128–1131.
107 See ICRC Guidelines, above note 26, Rules 5–6; ICRC Customary Law Study, above note 35, Rule 43; PERAC Principles, above note 6, Principle 14, commentary para.3.
108 See ICRC Guidelines, above note 26, Rule 7; ICRC Customary Law Study, above note 35, Rule 43; PERAC Principles, above note 6, Principle 14, commentary paras 4–7.
109 See ICRC Guidelines, above note 26, paras 117–122; M. Bothe *et al.*, above note 34, pp. 577–578.
110 See ICRC Guidelines, above note 26, Rule 8; ICRC Customary Law Study, above note 35, Rule 44; PERAC Principles, above note 6, Principle 14, commentary para. 8.
111 See ICRC Guidelines, above note 26, Rule1, para. 44.
112 ICRC Customary Law Study, above note 35, Rule 44; ICRC Guidelines, above note 26, para. 124.
113 See UNEP, above note 17, p. 18.

including the natural environment, against the effects of attacks", and that this obligation is a norm of customary law applicable in both IAC and NIAC.[114]

Accordingly, POs shall respect the principle of distinction and direct attacks only against military objectives. They are prohibited from launching attacks against military objectives that may be expected to cause incidental damage to the natural environment which would be excessive in relation to the concrete and direct military advantage anticipated. In addition, they must take constant care to spare the natural environment during military operations and must take all feasible precautions to avoid, and in any event to minimize, incidental damage to civilian property, including the natural environment.

The natural environment, or at least parts of it, further benefits from protections given to specially protected objects: objects indispensable to the survival of the civilian population, works and installations containing dangerous forces, and cultural property.[115] As civilian objects, parts of the natural environment are protected under IHL rules on enemy property. Likewise, parts of the natural environment may qualify as cultural property and benefit from additional protections granted to such property. The 1999 Secretary-General's Bulletin recognizes the prohibitions against attacking, destroying, removing or rendering useless objects indispensable to the survival of the civilian population, the prohibition relating to installations containing dangerous forces, and the protection given to cultural objects.[116] The UN Environmental Management Handbook indicates that directions to this effect should be issued and incorporated into pre-deployment briefings.[117] The natural environment also benefits from protections under the rules on enemy property: the prohibition on destruction of the natural environment not justified by imperative military necessity, the prohibition on pillage, and rules on private and public property.[118] Similar to these prohibitions, the 1999 Secretary-General's Bulletin recognized that POs have obligations in relation to the protection of cultural property and enemy property, including the prohibition on pillage and the misappropriation of the enemy's properties.[119] Moreover, the ICRC Guidelines restate rules on specific weapons that afford protection to the natural environment,[120] and according to the 1999 Secretary-General's Bulletin, UN forces shall respect the rules prohibiting or restricting the use of certain weapons and methods of combat under the relevant instruments of IHL.[121] These are obligations that IHL imposes on parties to an armed conflict, and when POs become a party to an armed conflict, they must observe such obligations.

114 See ICRC Guidelines, above note 26, Rule 9, para. 138.
115 See *ibid*., Rules 10–12.
116 1999 Secretary-General's Bulletin, above note 46, sections 6.7, 6.8, 6.6 respectively.
117 See Environmental Management Handbook, above note 7, p. 37.
118 See ICRC Guidelines, above note 26, Rules 13–15. See also 1999 Secretary-General's Bulletin, above note 46, section 6.6; PERAC Principles, above note 6, Principle 16.
119 See 1999 Secretary-General's Bulletin, above note 46, section 6.6.
120 See ICRC Guidelines, above note 26, Rules 19–25.
121 See 1999 Secretary-General's Bulletin, above note 46, section 6.2.

There are few specific protections addressing the natural environment *as such*. The principal specific protection relates to the prohibition on the use of methods and means of warfare that may cause widespread, long-term and severe damage to the natural environment.[122] It is prevalently accepted that this rule forms part of customary IHL applicable in IACs, and also arguably in NIACs.[123] The 1999 Secretary-General's Bulletin provides that UN forces are "prohibited from employing methods of warfare … which are intended, or may be expected to cause, widespread, long-term and severe damage to the natural environment".[124] The threshold under IHL[125] and the Bulletin ("widespread, long-term *and* severe damage to the natural environment") is higher and more challenging to be met than the standards under IEL that prohibit causing "significant" or "serious" harm to the environment.[126] The other specific protection under customary law, as identified by the ICRC, provides that "methods and means of warfare must be employed with due regard to the protection and preservation of the natural environment" and is also arguably applicable in NIACs.[127] Commentators have further argued that the customary IHL obligation of "due regard for the natural environment in military operations" is more "favourable for the environment and more flexible than the provisions of Additional Protocol I" as it specifically includes preservation of the natural environment.[128] Customary IHL further prohibits using the destruction of the natural environment as a weapon, and this prohibition is also arguably applicable in NIACs.[129] The right of UN forces to choose methods and means of combat is not unlimited, and they shall do so with due regard to the protection and preservation of the natural environment.[130]

In IAC, the natural environment can also benefit from the prohibition of reprisals against objects protected under the Geneva Conventions and the Hague Convention for the Protection of Cultural Property.[131] The prohibition on reprisal against objects protected under these instruments also forms part of customary IHL applicable in IACs.[132] Additional Protocol I (AP I) further prohibits reprisals in the conduct of hostilities against civilian objects, the natural environment, objects indispensable to the survival of the civilian population, and works and installations containing dangerous forces, namely dams, dykes and

122 See ICRC Customary Law Study, above note 35, Rule 45; ICRC Guidelines, above note 26, Rule 2.
123 ICRC Guidelines, above note 26, para. 47.
124 1999 Secretary-General's Bulletin, above note 46.
125 See ICRC Guidelines, above note 26, Rule 2, paras 49–72; PERAC Principles, above note 6, Principle 13, paras 5–9.
126 See Britta Sjöstedt, *The Role of Multilateral Environmental Agreements: A Reconciliatory Approach to Environmental Protection in Armed Conflict*, Hart, Oxford, London, New York, New Delhi and Sydney, 2021, p. 51; M. Tignino and T. Kebebew, above note 28, pp. 1210–1213.
127 See ICRC Guidelines, above note 26, Rule 1, para. 42; ICRC Customary Law Study, above note 35, Rule 44.
128 See M. Bothe *et al.*, above note 34, p. 575.
129 See ICRC Guidelines, above note 26, Rule 3, para. 76; ICRC Customary Law Study, above note 35, Rule 45.
130 See 1999 Secretary-General's Bulletin, above note 46, section 6.1.
131 See ICRC Guidelines, above note 26, Rule 4; ICRC Customary Law Study, above note 35, Rule 147; PERAC Principles, above note 6, Principle 15.
132 See ICRC Customary Law Study, above note 35, Rule 147; ICRC Guidelines, above note 26, para. 91.

nuclear electrical generating stations. As the ICRC Guidelines indicate, the prohibition on reprisals against such objects in the conduct of hostilities is not yet established as a rule of customary international law.[133] Regarding NIAC, neither common Article 3 nor Additional Protocol II includes the prohibition on reprisals. According to the ICRC Customary Law Study, "parties to such conflicts do not have the right to resort to belligerent reprisals".[134] Scholars also argue that the very notion of reprisals is conceptually inconceivable in NIACs.[135] PERAC Principle 15 provides that "attacks against the environment by way of reprisals are prohibited".[136] Under the commentary to Principle 15, it is pointed out that while the principle "reflects binding law in international armed conflicts for the wide majority of States, and seems to be consistent with *lex lata* in non-international armed conflicts, there is, at present, uncertainty concerning its customary status".[137] The 1999 Secretary-General's Bulletin specifies that UN forces "shall not engage in reprisals against … civilian objects" and "shall not engage in reprisals against objects and installations", including cultural objects, objects indispensable to the survival of the civilian population, and works and installations containing dangerous forces.[138] Accordingly, POs shall not engage in reprisals against these objects and installations, including when they are part of the natural environment.

In addition to their relevant IHL obligations under the SOFA and the 1999 Secretary-General's Bulletin, POs must respect the aforementioned general and specific customary IHL protections for the natural environment. It is crucial to emphasize that the Secretary-General's Bulletin does not differentiate between IAC and NIAC, and that therefore, UN forces must comply with all of the IHL prohibitions reiterated in the Bulletin in both scenarios.[139]

As discussed in the previous sections, POs also assume obligations under customary rules and principles of IEL, whether they are a party to an armed conflict or not, as these obligations usually continue to apply even during armed conflicts.[140] The PERAC Principles affirm that both treaty and customary IEL continue to apply during armed conflict as long as they are not incompatible with IHL and that POs shall take, as appropriate, measures to prevent, mitigate and remediate the harm to the environment resulting from their operations.[141] For situations of occupation, the PERAC Principles contain a general duty "to respect and protect the natural environment in accordance with *applicable international*

133 See ICRC Guidelines, above note 26, para. 93; ICRC Customary Law Study, above note 35, Rule 147; PERAC Principles, above note 6, Principle 15, paras 3, 10.

134 ICRC Customary Law Study, above note 35, Rule 148; ICRC Guidelines, above note 26, para. 94; PERAC Principles, above note 6, Principle 15, paras 7–8.

135 M. Sassòli, above note 82, p. 83.

136 PERAC Principles, above note 6, Principle 15.

137 *Ibid.*, Principle 15, para. 10.

138 See 1999 Secretary-General's Bulletin, above note 46, sections 5.6, 6.9 respectively.

139 See D. Shraga, above note 48, pp. 372–373.

140 See ILC, *Draft Articles on the Effects of Armed Conflicts on Treaties, with Commentaries*, UN Doc. A/66/10, 2011, Annex, Article 7, para. 101; ICRC Guidelines, above note 26, paras 29–36; UNEP, above note 17, pp. 34–46; M. Bothe *et al.*, above note 34, pp. 588–589.

141 See PERAC Principles, above note 6, p. 136, para. 4, and Principle 7.

law".[142] The principles of environmental law, mainly the precautionary, preventive and sustainability principles, complement the protection of the natural environment under IHL.[143] The ICRC Guidelines affirm that "other rules within different branches of international law may, depending on the context, and in whole or in part, complement or inform the IHL rules protecting the natural environment in times of armed conflict".[144]

These obligations may require POs to take measures to mitigate their environmental impact and promote sustainable practices, even in the midst of an armed conflict. For instance, under the internal rules of the UN, POs are obliged not to "discharge untreated wastewaters directly into streams, rivers, groundwater or other bodies of water" and are required to contribute to "the preservation and rehabilitation of ecosystems and cultural heritage".[145] Besides this, the UN has already developed policies, guidelines and a code of conduct to ensure that POs comply with IHL. The mission's Force Commander shall institute instructions and operating procedures and implement other necessary measures to meet the UN's environmental mandates and obligations throughout the mission lifecycle, including IHL obligations outlined in the 1999 Secretary-General's Bulletin during military operations.[146] Further, the Force Commander shall "appoint a Force advisor to serve as the focal point within the military component of the mission to liaise with the environmental officer and to deal with environmental issues within the military component".[147] POs including MONUSCO and UNMISS have now designated environmental focal points in their civilian and uniformed components.[148]

When a PO is not a party to an armed conflict

IHL does not regulate the conduct of POs deployed in the context of an armed conflict to which they do not become a party. The peacekeepers individually remain bound by the criminalized rules of IHL, such as the prohibitions against pillaging and employing poison or poisoned weapons.[149] Accordingly, when POs do not engage in armed conflict, the main starting point is the "duty to ensure respect" for IHL, which applies both during armed conflict and in peacetime as enshrined under common Article 1 of the Geneva Conventions and Article 1 of AP I. According to the ICJ, the duty to respect and ensure respect emanates from the general principles of IHL to which the Geneva Conventions merely give

142 *Ibid*., Principle 19 (emphasis added).
143 See e.g. K. Stefanik, above note 27, pp. 113–115; R. van Steenberghe, above note 106.
144 ICRC Guidelines, above note 26, para. 26.
145 See 2022 Environmental Policy, above note 14, paras 35–40.
146 Environmental Management Handbook, above note 7, pp. 5, 10, 37, 68–70; 2022 Environmental Policy, above note 14, para. 104.
147 See Environmental Management Handbook, above note 7, p. 69; 2022 Environmental Policy, above note 14, para. 105.
148 See 2019 Environment Strategy, above note 9, pp. 3–4.
149 See M. Sassòli, above note 82, p. 470.

specific expression.[150] This overarching obligation to "ensure respect" for the entire body of IHL could broadly be seen as a logical extension of the general object and purpose of IHL.[151]

Based on this understanding, this section examines the obligation of POs to ensure respect for IHL, including the rules that protect the natural environment. The first step is to determine whether POs have the duty to ensure respect for IHL. The UN has acknowledged its obligation to ensure respect for IHL on various occasions:[152] for instance, under its Human Rights Due Diligence Policy of 2013,[153] the UN recognized its obligations towards non-UN forces and has been taking measures to prevent and respond to violations by third parties by accepting the applicability of human rights law and IHL.[154] The most important mandate of POs – the protection of civilians, as recognized under the 2019 UN policy on the protection of civilians – is also connected with respecting and ensuring respect for IHL.[155] It is also argued that this obligation would squarely fit into the notion of "fundamental principles and rules" enshrined in the 1999 Secretary-General's Bulletin.[156] The International Criminal Tribunal for the former Yugoslavia (ICTY) in the *Kupreskic* case underscored that most rules of IHL, due to their absolute character, lay down obligations for the international community, and that each and every member of that community has "a legal entitlement to demand respect for such obligations".[157] Thus, as a member of the international community, the UN should also ensure respect for such IHL obligations, which arguably include environmental obligations.

Moreover, the Undersecretary-General for Legal Affairs and UN Legal Counsel, Miguel de Serpa Soares, has indicated that the UN has a general role in ensuring respect for IHL through different measures, such as establishing

150 ICJ, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Judgment, *ICJ Reports 1986*, para. 220.

151 See Jean-Marie Henckaerts, "Common Article 1: A Lynchpin in the System to Ensure Respect for International Humanitarian Law", *ILA Reporter*, 11 July 2016, available at: https://ilareporter.org.au/2016/11/common-article-1-a-lynchpin-in-the-system-to-ensure-respect-for-international-humanitarian-law-jean-marie-henckaerts/.

152 See UN General Assembly, *Report of the Secretary-General on the Work of the Organization*, UN Doc. A/51/1, 1996, para. 117.

153 UN General Assembly and UN Security Council, *Human Rights Due Diligence Policy on United Nations Support to Non-United Nations Security Forces*, UN Doc. A/67/775 S/2013/110, 5 March 2013.

154 See N. White, above note 83.

155 UN DPO, *The Protection of Civilians in United Nations Peacekeeping*, Ref. 2019.17, 1 November 2019, paras 27, 45, 50–62.

156 See Matthew Happold, "Comment – Obligations of States Contributing to UN Peacekeeping Missions under Common Article 1 of the Geneva Conventions", in Heike Krieger (ed.), *Inducing Compliance with International Humanitarian Law: Lessons from the African Great Lakes Region*, Cambridge University Press, Cambridge, 2015, pp. 388–390; Leanne M. Smith, "The Obligation to Ensure Respect for IHL in the Peacekeeping Context: Progress, Lessons and Opportunities", in Eve Massingham and Annabel McConnachie (eds), *Ensuring Respect for International Humanitarian Law*, Routledge, Abingdon, 2021, pp. 151–154.

157 See ICTY, *The Prosecutor v. Kupreskic et al.*, Case No. IT-95-16-T, Judgment (Trial Chamber), 14 January 2000, para. 519 ("with the consequence that each and every member of the international community has a 'legal interest' in their observance and consequently a legal entitlement to demand respect for such obligations"); ICTY, *The Prosecutor v. Anto Furundžija*, Case No. IT-95-17/1-T, Judgment (Trial Chamber), 10 December 1998, para. 151.

commissions of inquiry to investigate alleged violations of IHL, requesting the Secretary-General to report on a specific armed conflict, mandating POs to monitor potential violations of IHL, providing pre-deployment training for peacekeepers, and imposing sanctions on perpetrators.[158] Furthermore, the UN's particular role in ensuring compliance in situations of serious violations of IHL is expressly recognized under Article 89 of AP I, and it is increasingly taking actions ranging from the condemnation of violations to the adoption of sanctions and the deployment of POs.[159] The deployment of POs may also be viewed as one of the measures that the UN takes to enforce IHL.[160]

As a subject of international law, the UN, regardless of whether it is a party to an armed conflict, has to ensure respect for IHL by others.[161] In a statement to the General Assembly, the ICRC has indicated that the UN is required to ensure that parties to a conflict comply with IHL and that to that end, it should take steps to bring parties to armed conflict back to an attitude of respect for the law using its influence.[162] Given the power and the influence that POs have on areas of their deployment against different parties, it can be argued that they have an even greater responsibility to ensure respect for IHL, including for those norms relating to the natural environment.[163] The UN can mandate POs to engage with parties to armed conflict and to monitor and report violations of IHL relating to the environment or establish fact-finding or inquiry commissions.

The next question is to assess the scope of the obligation to ensure respect for IHL. There are different practices and views concerning the scope of this obligation.[164] The internal dimension of the obligation – i.e., to respect and ensure respect for IHL by the State Party's own armed forces, by those whose acts or omissions are attributable to them and the whole population over which they establish authority or jurisdiction – is uncontested. For example, the UN provides training in IHL for its peacekeepers at the start of and during their deployment. What remains contentious is the external dimension of the obligation to ensure respect by other actors, its customary law status, and

158 See UN Security Council, *The Promotion and Strengthening of the Rule of Law in the Maintenance of International Peace and Security: International Humanitarian Law*, UN Doc. S/PV8596, 13 August 2019, p. 3.

159 See ICRC Commentary on GC III, above note 84, para. 215.

160 M. Sassòli, above note 82, p. 469; L. Smith, above note 156, p. 146 (Smith identifies collaboration between the UN and the ICRC as one way to implement the obligation to ensure respect for IHL).

161 See ICRC Commentary on GC III, above note 84, paras 171–175.

162 ICRC, "Peacekeeping Operations: ICRC Statement to the United Nations", *International Committee of the Red Cross*, 30 October 2017, available at: www.icrc.org/en/document/peacekeeping-operations-icrc-statement-united-nations-2017.

163 See Ola Engdahl, "Compliance with International Humanitarian Law in Multinational Peace Operations", *Nordic Journal of International Law*, Vol. 78, No. 4, 2009, p. 517; M. Happold, above note 156, pp. 383–384.

164 See ICRC Commentary on GC III, above note 84, paras 176–216; Knut Dörmann and Jose Serralvo, "Common Article 1 to the Geneva Conventions and the Obligation to Prevent International Humanitarian Law Violations", *International Review of the Red Cross*, Vol. 96, No. 895–896, 2014; Théo Boutruche and Marco Sassòli, *Expert Opinion on Third States' Obligations vis-à-vis IHL Violations under International Law, with a Special Focus on Common Article 1 to the 1949 Geneva Conventions*, Norwegian Refugee Council, 8 November 2016.

whether common Article 1 imposes any obligation on third parties, including POs in the context of NIACs.[165] This external dimension has evolved over time and requires the efforts of third parties to bring parties to an armed conflict back to a position of respect for IHL by preventing potential breaches, encouraging compliance and investigating violations.[166] The prevalent view is that the obligation encompasses internal and external dimensions and applies to both IAC and NIAC.

As indicated in the ICRC Guidelines, "States may not encourage violations of international humanitarian law, including of the rules protecting the natural environment, by parties to an armed conflict. They must exert their influence, to the degree possible, to stop violations of international humanitarian law."[167] Though this rule is addressed to "States", the ICRC has already confirmed that an IO "which exercises command and control over national contingents or which has mandated the recourse to armed force by its Member States" is the addressee of the obligation to respect and ensure respect for IHL,[168] including the rules on the protection of the natural environment. As part of their prevention and protection activities, POs must do everything in their power to ensure respect for IHL and to promote respect for the natural environment in armed conflict situations. POs can use the ICRC Guidelines, PERAC Principles and other instruments to increase their engagement with parties to armed conflict so as to strengthen the protection of natural resources, "map out critical environmental infrastructure and encourage conflict parties to agree on protected demilitarised zones", and enhance domestic capacity and expertise to promote accountability for protecting the natural environment.[169] By adhering to IHL, POs can prevent environmental degradation and contribute to the restoration of peace and stability.

In addition to their obligations under IHL, there are customary IEL principles and standards that need to be respected by POs deployed in relation to armed conflicts. Moreover, POs have already begun to translate their environmental obligations into action by adopting environmental policies and guidelines and starting pre-deployment training. PERAC Principle 7 codifies this already widespread practice, which relies on binding obligations.

165 See e.g. ICRC Commentary on GC III, above note 84, para. 153; Robin Geiß, "Common Article 1 of the 1949 Geneva Conventions – Scope and Content of the Obligation to 'Ensure Respect' – 'Narrow but Deep' or 'Wide and Shallow'?", in H. Krieger (ed.), above note 156; Michael N. Schmitt and Sean Watts, "Common Article 1 and the Duty to 'Ensure Respect'", *International Law Studies*, Vol. 96, 2020; Federal Court of Canada, *Daniel Turp v. The Minister of Foreign Affairs*, Case No. T-462-16, 24 January 2017, para. 71.

166 See ICRC Commentary on GC III, above note 84, paras 186–206. See also ICJ, *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, 9 July 2004, paras 158–163.

167 ICRC Guidelines, above note 26, Rule 26(B).

168 See ICRC Commentary on GC III, above note 84, paras 171–175; Timo Koivurova and Krittika Singh, "Due Diligence", in *Max Planck Encyclopedia of Public International Law*, 2022, paras 22–27, 45; Emilie Max, *The UN Security Council and Common Article 1: Understanding the Role of Peacekeeping Operations in Ensuring Respect for IHL*, Working Paper No. 6, Geneva Academy, 2021.

169 See A. Sarfati, above note 3, pp. 8–9.

Conclusion

The 1992 UN Conference on Environment and Development affirmed that "peace, development and environmental protection are interdependent and indivisible".[170] The PERAC Principles also emphasize the importance of protecting the environment for restoring and ensuring lasting peace, and recommend incorporating the restoration and protection of the environment damaged by conflict into peace agreements.[171] Thus, protecting the environment is a critical component for ensuring lasting peace; accordingly, POs are required to take measures to prevent harm to the environment, reduce their carbon footprint, manage waste responsibly, conserve local ecosystems and assess risks linked to environmental degradation, climate change and resource conflicts.[172] POs must also address environmental issues and risks in their efforts to promote peace and security, and UN environmental policies and guidelines are already addressing these issues. POs have an essential role, including helping host States to address environmental degradation, climate change and illegal exploitation of natural resources. Furthermore, measures such as carrying out environmental impact assessments, mapping areas of particular environmental importance and coordinating efforts among relevant international actors are essential. Systematically factoring environmental concerns into the mandates of POs will enable them to better anticipate, prevent and respond to such non-traditional security threats and ensure lasting peace.[173]

For POs, respecting and protecting the environment and managing their environmental footprint should be viewed not only as a policy matter (operational effectiveness, legitimacy and long-term legacy) but also as a legal obligation. By upholding their environmental obligations and implementing best practices, POs can directly contribute to maintaining international peace and security, promoting human rights and supporting sustainable development. Hence, the UN Security Council should continue including and expanding environmental functions in the mandates of POs. It is also crucial to sensitize and spread awareness of environmental issues among peacekeepers, policy-makers and other relevant national and international actors in order to ensure a sustainable future.

170 Rio Declaration, above note 31, Principle 25.

171 PERAC Principles, above note 6, Principle 22.

172 See United Nations, *Greening the Blue Report 2021: The UN System's Environmental Footprint and Efforts to Reduce It*, 18 February 2022, pp. 12–14; UNSC Res. 2349, 31 March 2017, para.26; UNGA Res. 63/281, 11 June 2009; United Nations, "Security Council Statement on Possible Security Implications of Climate Change Important When Climate Impacts Drive Conflict", SC/10332, 20 July 2011, available at: https://press.un.org/en/2011/sc10332.doc.htm. See also Jean-Pierre Lacroix, "Protecting Peace: How UN Peacekeepers Are Part of the Climate Solution", 21 September 2019, available at: https://medium.com/we-the-peoples/protecting-peace-how-un-peacekeepers-are-part-of-the-climate-solution-707c7fecba6e; O. Brown, above note 4, p. 12.

173 See HIPPO, above note 12, para. 66; A. Sarfati, above note 3, p. 7.

International Review of the Red Cross (2023), **105** (924), 1568–1599.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000358

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International environmental law as a means for enhancing the protection of the environment in warfare: A critical assessment of scholarly theoretical frameworks

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* Certain arguments developed in this paper have already been explored in two other papers by the author, but largely from a different perspective. See Raphaël van Steenberghe, "The Interplay between International Humanitarian Law and International Environmental Law: Towards a Comprehensive Framework for a Better Protection of the Environment in Armed Conflict", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022; Raphaël van Steenberghe, "The Impacts of Human Rights Law on the Regulation of Armed Conflict: A Coherency-Based Approach to Dealing with Both the 'Interpretation' and 'Application' Processes", *International Review of the Red Cross*, Vol. 104, No. 919, 2022.

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Abstract

The protection of the environment during warfare attracted significant attention in the 1990s, especially after the 1990–91 Gulf War. It became clear at that time that the few rules provided by international humanitarian law (IHL) aimed specifically at protecting the environment were insufficient. Various studies have since been undertaken with the aim of strengthening that protection from an IHL perspective. It is only recently that scholars and institutions like the International Law Commission have started to reflect on how to better protect the environment in armed conflict through the lens of another branch of international law, namely, international environmental law (IEL). Such an approach has involved examining the interplay between IHL and IEL, and scholars have subsequently proposed and then elaborated on frameworks in that respect. This paper intends to identify common trends of those frameworks and to critically appraise them, with the aim of providing a suitable approach to the interplay between IHL and IEL.

Keywords: international humanitarian law, international environmental law, armed conflict, *lex specialis*, conflicts of norms, principle of systemic integration, coherence.

Introduction

The 1990–91 Gulf War was the main starting point for doctrinal reflections on how to enhance the protection of the environment in armed conflict through international environmental law (IEL). The devastating environmental damage caused by that war showed the weaknesses of the rules of international humanitarian law (IHL) that were specifically devoted to the protection of the environment at the time.[1] Attempts were made as early as June 1991 to provide additional IHL rules on the protection of the environment through the adoption of a new convention;[2] however, this proposal for a "Fifth Geneva Convention" did not have any follow-up.

It is not surprising, therefore, that, shortly after the Gulf War, States considered the issue of the interplay between IHL and IEL. In October 1991, the delegate of the Netherlands stated at the United Nations (UN) General Assembly Sixth Committee, on behalf of the European Community, that it would

> be necessary to examine the relationships between international environmental law and humanitarian law, which seemed to be developing along rather

1 See in particular Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I), Arts 35, 55. See also Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, 1108 UNTS 151, 10 December 1976 (entered into force 5 October 1978).

2 Glen Plant, *Environmental Protection and the Law of War: A "Fifth Geneva" Convention on the Protection of the Environment in Armed Conflict?*, Belhaven Press, London and New York, 1992.

> independent lines, even though the developments of environmental law had consequences for the interpretation of rules concerning the protection of the civilian population.[3]

In the same vein, a group of experts convened by the International Committee of the Red Cross (ICRC) in 1992, in the context of the General Assembly's work on the topic, identified several "most important matters requiring study", including the "[r]elationship between international humanitarian law and international environmental law (regional and universal regulations)".[4]

Thirty years later, that issue has still not been comprehensively addressed. The ICRC's 2020 *Guidelines on the Protection of the Natural Environment in Armed Confl*ict still raise the concern raised by the ICRC-convened group of experts in 1992: the need to continue clarifying the interaction between the two bodies of law when a rule of IEL and a rule of IHL are found to apply in parallel.[5] In 2022, numerous States and organizations criticized the Draft Principles on Protection of the Environment in Relation to Armed Conflicts adopted by the International Law Commission (ILC) in 2019 as not providing enough guidance on the interplay between IHL and IEL.[6] That being said, at least some aspects of the issue have been implicitly or expressly addressed by the ILC and the ICRC, as well as by scholars. In addition, two comprehensive studies have recently been devoted to the topic,[7] with one of them also considering the interactions of IEL and IHL with international human rights law (IHRL).[8] A general survey of those works shows that two main processes have been considered for enhancing the protection of the environment in warfare through IEL.[9] The first is the application of that body of law, including its treaties, in armed conflict alongside

3 *General Assembly Sixth Committee: Summary Record of the 20th Meeting*, UN Doc A/C.6/46/SR.20, 30 October 1991, para. 3.

4 *Protection of the Environment in Times of Armed Conflict: Report of the Secretary-General*, UN Doc. A/47/328, 31 July 1992, paras 52, 56; see also paras 48, 63.

5 International Committee of the Red Cross (ICRC), *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law, with Commentary*, Geneva, 2020, para. 35.

6 See e.g. comments and observations made by States and institutions quoted in Marja Lehto, *Third Report on the Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/750, 16 March 2022, para. 139. Only one brief and unsatisfactory paragraph has been added to that end in the final version of the commentaries on the Draft Principles adopted in 2022: see ILC, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries*, UN Doc. A/77/10, 2022 (ILC Commentaries), p. 136, para. 4.

7 Britta Sjöstedt, *The Role of Multilateral Environmental Agreements: A Reconciliatory Approach to Environmental Protection in Armed Conflict*, Hart, Oxford, 2020; Anne Dienelt, *Armed Conflicts and the Environment: Complementing the Laws of Armed Conflict with Human Rights Law and International Environmental Law*, Springer, Cham, 2022. See also the recent symposium co-edited by Jerôme de Hemptinne and this author on "The Protection of the Environment during Warfare: An International Environmental Law Perspective", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022.

8 A. Dienelt, above note 7.

9 See also, in addition to these two processes, a normative process envisaged by certain scholars which involves using IEL to inspire new IHL rules. For an illustrative case, see e.g. Karen Hulme, "Armed Conflict and Biodiversity", in Michael Bowman, Peter Davies and Edward Goodwin (eds), *Research Handbook on Biodiversity and Law*, Edward Elgar, Cheltenham, 2016, pp. 263–264.

IHL. This "application process" was envisaged soon after the 1990–91 Gulf War.[10] The application of IEL in armed conflict was notably asserted in July 1991 by the participants at the Conference of Experts on the Use of the Environment as a Tool of Conventional Warfare co-sponsored by the Canadian Ministry of External Affairs and the UN.[11] The other process, which was envisaged much later in legal literature, is the "interpretation process", whereby IHL concepts or norms, such as the IHL notion of the "natural environment", are interpreted in light of IEL.[12]

The aim of this paper is to provide a critical assessment of the work of legal scholars dealing with those two processes, including the work of institutions like the ILC, the ICRC and the UN Environment Programme (UNEP). In such works, including the most comprehensive ones, developments may be missing or may be confusing or contradictory in relation to both processes. This paper is mainly concerned with two aspects of the interplay between IHL and IEL, namely the conditions for such interplay and the mechanisms used to solve conflicts between these two bodies of law.

Conditions for IHL–IEL interplay

The conditions for IHL–IEL interplay are different depending upon whether IEL is used to complement IHL through its application in armed conflict (the application process) or through the interpretation of IHL in light of its rules or concepts (the interpretation process). This section will examine the relevant conditions applicable to each process.

The application process

IHL is expected to interact with IEL under the application process only when the two bodies of law enter into conflict. This requires, as a precondition, that they apply to the same conduct and that their respective scopes of application overlap. One must therefore first address the issue of the overlapping scopes of application of IHL and IEL before examining when conflicts arise between the two bodies of law and how to deal with such conflicts.

10 The issue had nonetheless been briefly addressed in 1985 by the Institute of International Law during its work on the effects of armed conflict on treaties: see Institute of International Law, *Yearbook*, Vol. 61, Part II, Session of Helsinki, Pedone, Paris, 1985, p. 223.

11 See Conference of Experts on the Use of the Environment as a Tool of Conventional Warfare (Conference of Experts), "Chairman's Conclusions", July 1991, para. 11, available at: https://gac.canadiana.ca/view/ooe.b4224383F/1 (all internet references were accessed in August 2023). For scholars, see e.g. Michael Bothe, "The Protection of the Environment in Times of Armed Conflict: Legal Rules, Uncertainty, Deficiencies and Possible Developments", *German Yearbook of International Law*, Vol. 34, 1991, p. 59.

12 See e.g. Jean d'Aspremont, "Towards an International Law of Brigandage: Interpretative Engineering for the Regulation of Natural Resources Exploitation", *Asian Journal of International Law*, Vol. 3, No. 1, 2013, p. 17; Daniëlla Dam-de Jong, *International Law and Governance of Natural Resources in Conflict Situations*, Cambridge University Press, Cambridge, 2013, pp. 115–116; Eliana Cusato, *The Ecology of War and Peace: Marginalising Slow and Structural Violence in International Law*, Cambridge University Press, Cambridge, 2021, p. 91.

Overlapping scopes of application

In order to determine the extent to which the respective scopes of application of IEL and IHL may overlap, the different aspects of the IEL scope of application must be examined. The first relates to its temporal scope; this is the well-known issue of the applicability of IEL in armed conflict. The two other aspects, which are rather neglected in legal literature, include the personal and geographical scopes of IEL.

Temporal scope

IHL and IEL may overlap both in times of peace and war. Whereas IHL primarily applies in armed conflict, it contains certain rules that also apply before an armed conflict begins, like the rules prescribing precautionary measures against the effect of attacks,[13] or that extend beyond the end of hostilities, such as the obligations relating to remnants of war.[14] Likewise, although IEL primarily applies in times of peace and contains relevant rules such as those imposing preventive measures[15] or dealing with access to environmental information,[16] it does not necessarily cease to apply during war. It has indeed been extensively debated in legal literature whether IEL continues to apply once an armed conflict has broken out.[17]

Usually, scholars agree that IEL treaties continue to apply to States at least in non-international armed conflict (NIAC), as well as between the belligerent and neutral States in international armed conflict (IAC).[18] As between belligerents in IAC, scholars usually start by looking at the terms of the treaties,[19] before

13 See e.g. AP I, Art. 58.

14 See e.g. Protocol on Prohibitions or Restrictions on the Use of Mines, Booby-Traps and Other Devices, as Amended on 3 May 1996, Annexed to the Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons which May Be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, 2048 UNTS 93, 3 May 1996 (entered into force 3 December 1998), Art. 9.

15 See e.g. Convention on Biological Diversity, 1760 UNTS 79, 5 June 1992 (entered into force 29 December 1993) (Biodiversity Convention), Art. 7.

16 For IEL treaties on the matter, see e.g. those mentioned in Marie G. Jacobsson, *Third Report on the Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/700, 3 June 2016, paras 130–140.

17 Silja Vöneky, "A New Shield for the Environment: Peacetime Treaties as Legal restraints of Wartime Damage", *Review of European, Comparative and International Environmental Law*, Vol. 9, No. 1, 2000; Michael N. Schmitt, "Green War: An Assessment of the Environmental Law of International Armed Conflict", *Yale Journal of International Law*, Vol. 22, No. 1, 1997, pp. 36–41; M. Bothe, above note 11, p. 54; Richard G. Tarasofsky, "Legal Protection of the Environment during International Armed Conflict", *Netherlands Yearbook of International Law*, Vol. 24, 1993, pp. 22 ff.; John P. Quinn, Richard T. Evans and Michael J. Boock, "United States Navy Development of Operational-Environmental Doctrine", in Jay E. Austin and Carl E. Bruch (eds), *The Environmental Consequences of War: Legal, Economic, and Scientific Perspectives*, Cambridge University Press, Cambridge, 2010, pp. 164–165.

18 See e.g. Karine Bannelier-Christakis, "L'utopie de la 'guerre verte': Insuffisances et lacunes du régime de protection de l'environnement en temps de guerre", in Vincent Chétail (ed.), *Permanence et mutations du droit des conflits armés*, Bruylant, Brussels, 2013, p. 405 fn. 66 ; Michael Bothe, Carl Bruch, Jordan Diamond and David Jensen, "International law protecting the Environment during Armed Conflict: Gaps and Opportunities", *International Review of the Red Cross*, Vol. 92, No. 879, 2010, p. 581 ; Dapo Akande, "Nuclear Weapons, Unclear Law? Deciphering the *Nuclear Weapons* Advisory Opinion of the International Court", *British Yearbook of International Law*, Vol. 68, 1997, p. 185.

19 See e.g. UNEP, *Protecting the Environment during Armed Conflict: An Inventory and Analysis of International Law*, 2009, pp. 35–40; M. G. Jacobsson, above note 16, paras 104–120; Alice Louise Bunker, "Protection of the Environment during Armed Conflict: On Gulf, Two Wars", *Review of*

submitting a theory to settle the issue in the numerous instances where the treaties are silent.[20] Since the adoption of the Articles on the Effects of Armed Conflict on Treaties by the ILC in 2011,[21] scholars also abundantly refer to these articles to assert the continued applicability of IEL treaties in armed conflict,[22] even though, as stressed in legal literature,[23] the rebuttable presumption of such applicability provided in the annex to those articles is not based on any firm practice. Other scholars tend to complement the ILC work by relying on "specific State practice", namely declarations made by belligerents in a particular conflict.[24] As a result, it is now often stated in legal scholarship that IEL, including its treaties, continues to apply in armed conflict unless expressly provided otherwise.[25] Elements other than those usually mentioned in legal scholarship, however, could be submitted to support that view. The most interesting one is "general State practice", in the sense of the practice taking the form of general State declarations on the topic, which may supplement "specific State practice". Although they were quite scarce after the 1990–91 Gulf War, such declarations have flourished for the last decade, especially in the context of the ILC's work on the protection of the environment in relation to armed conflicts.[26]

In addition, it is intriguing to observe that many scholarly works examine the issue of the applicability of IEL in armed conflict in relation to IEL itself, as a

European Community and International Environmental Law, Vol. 13, No. 2, 2004, pp. 202–203; E. Cusato, above note 12, p. 89.

20 See e.g. the theories developed in S. Vöneky, above note 17, pp. 20–32; M. N. Schmitt, above note 17, pp. 36–41; Stephanie N. Simonds, "Conventional Warfare and Environmental Protection: A Proposal for International Legal Reform", *Stanford Journal of International Law*, Vol. 29, 1992, pp. 168 ff.

21 UNGA Res. 66/99, 9 December 2011, Annex.

22 See e.g. Marja Lehto, *First Report on the Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/720, 30 April 2018, para. 78; D. Dam-de Jong, above note 12, p. 172; B. Sjöstedt, above note 7, pp. 150–159; A. Dienelt, above note 7, pp. 230–232.

23 See e.g. Adrian Loets, "An Old Debate Revisited: Applicability of Environmental Treaties in Times of International Armed Conflict Pursuant to the International Law Commission's 'Draft Articles on the Effects of Armed Conflicts on Treaties'", *Review of European, Comparative and International Environmental Law*, Vol. 21, No. 2, 2012, p. 133.

24 See e.g. Cyprien Dagnicourt, *La protection de l'environnement en période de conflit armé*, L'Harmattan, Paris, 2020, pp. 137–138.

25 See e.g. ILC Commentaries, above note 6, p. 136, para. 4; see also p. 141, para. 4, and p. 159, para. 3.

26 For explicit endorsements of the continued applicability of IEL in armed conflict, see e.g. statements from Thailand (UN Doc. A/C.6/71/SR.29, 2 December 2016, para. 10) and Portugal (UN Doc. A/C.6/73/SR.28, 10 December 2018, para. 88). For implicit endorsements, see statements made by States asking the ILC to examine (or approving the ILC's proposals regarding) the interactions between IHL and IEL in armed conflict (see e.g. Azerbaijan (UN Doc. A/C.6/73/SR.29, 10 December 2018, para. 114); Vietnam (UN Doc. A/C.6/73/SR.30, 6 December 2018, para. 44); Algeria (*ibid.*, para. 82); Italy (UN Doc. A/C.6/70/SR.22, 23 November 2015, para. 117); Greece (UN Doc. A/C.6/70/SR.24, 4 December 2015, paras 2–3; UN Doc. A/C.6/71/SR.29, 2 December 2016, para. 17); Belarus (UN Doc. A/C.6/70/SR.24, 4 December 2015, para. 15); Slovenia (UN Doc. A/C.6/70/SR.24, 4 December 2015, para. 39); Lebanon (*ibid.*, para. 59); Austria (*ibid.*, para. 66); Romania (UN Doc. A/C.6/72/SR.26, 5 December 2017, para. 28); the Netherlands (*ibid.*, para. 37); Thailand (*ibid.*, para. 60); Malaysia (*ibid.*, para. 120); South Africa (UN Doc. A/C.6/73/SR.30, 6 December 2018, paras 2–3)), or underlining that IHL remains the *lex specialis* in relation to IEL in such conflicts (see e.g. Belarus (UN Doc. A/C.6/70/SR.24, 4 December 2015, para. 15); Greece (UN Doc. A/C.6/71/SR.29, 2 December 2016, para. 17); the United States (UN Doc. A/C.6/73/SR.29, 10 December 2018, para. 41); South Africa (UN Doc. A/C.6/73/SR.30, 6 December 2018, para. 3)).

"special regime", or IEL treaties.[27] Few scholarly writings focus on that issue in relation to the rules of IEL, even though certain scholars rightly stress that such an issue must ultimately be settled at that level when treaties do not contain any indication on their applicability in armed conflict.[28] The traditional test based on the compatibility of a treaty with a state of war might prove useful in this regard.[29] It could exclude the applicability of certain IEL obligations whose performance would be unrealistic between belligerents, such as obligations of cooperation when they are directly connected to the military effort of the belligerents and do not provide a solution that would make them compatible with a state of war.[30] This may actually have a significant impact on the applicability of IEL during warfare, since obligations of cooperation constitute the core business of IEL; that body of law is indeed primarily driven by the principle of good neighbourliness. Alternatively, classical mechanisms provided in the law of international responsibility, such as force majeure, or in treaty law, like the recognition of a fundamental change of circumstances, might be invoked in certain circumstances[31] to exclude the operation of the incompatible IEL obligation.[32]

That being said, certain arguments often developed in legal scholarship, or by authoritative institutions, in relation to the issue of the continued applicability of IEL in armed conflict must be either rejected or developed. One of them, supported by scholars,[33] the ICRC[34] and the ILC Rapporteur,[35] is to make the continued applicability of IEL dependent upon a consistency test with IHL. This argument is questionable as it confuses the applicability of a rule with its application to a

27 See e.g. above note 17.

28 See e.g. Jorge Viñualez, "Régime spécial – cartographies imaginaires: Observations sur la portée juridique du concept de 'régime spécial' en droit international", *Journal de Droit International*, No. 140, 2013, pp. 405 ff.

29 For that test, see e.g. Jost Delbrück, "War, Effect on Treaties", in *Encyclopaedia of Public International Law*, Vol. 4, 2000, p. 1371.

30 See e.g. Convention on the Law of the Non-Navigational Uses of International Watercourses, UN Doc. A/51/869, 21 May 1997 (entered into force 17 August 2014), Art. 30, which authorizes the States Parties to resort to indirect procedures in order to fulfil their obligation of cooperation "[i]n cases where there are serious obstacles to direct contacts between watercourse States". See also ILC, *Principles on Protection of the Environment in Relation to Armed Conflicts*, UNGA Res. 77/104, 7 December 2022 (PERAC Principles), Principle 23(2).

31 These are not available to the aggressor State: see, respectively, ILC, *Responsibility of States for Internationally Wrongful Acts*, UNGA Res. 56/83, 12 December 2001, Art 23(2)(a); Vienna Convention on the Law of Treaties, 1155 UNTS 331, 23 May 1969 (entered into force 27 January 1980) (VCLT), Art. 62(2)(b). See also ILC, *Report of the International Law Commission: Sixty-Third Session*, UN Doc. A/66/10, 2011, p. 195, Art. 15. For detailed and rare discussion on those traditional mechanisms in relation to the applicability of IEL in armed conflict, see D. Dam-de Jong, above note 12, pp. 179–191; C. Dagnicourt, above note 24, pp. 140–143.

32 According to Article 44(3) of the VCLT, above note 31, only the provisions affected by the change of circumstances, rather than the whole treaty, might be suspended or terminated under certain conditions.

33 See e.g. J. P. Quinn, R. T. Evans and M. J. Boock, above note 17, p. 164; D. Dam-de Jong, above note 12, p. 175.

34 See ICRC, *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*, UN Doc. A/49/323, 19 August 1994, Annex, para. 5; ICRC, above note 5, para. 33. The ICRC's 2020 Guidelines (above note 5) nonetheless also refer to a test of incompatibility "with the characteristics of the armed conflict".

35 M. Lehto, above note 22, para. 79; Marja Lehto, *Second Report on the Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/728, 27 March 2019, para. 28.

given conduct. It is only when two rules are applicable that this test can operate to determine which rule applies. This is actually the reasoning adopted by human rights bodies. Those bodies do not question the applicability of an IHRL rule in the case of conflict with IHL, while applying the regime provided under IHL to the concrete conduct at stake.[36] This has the advantage of maintaining the applicability of the inconsistent IEL rule and of providing the State(s) victim of the violation of that rule with an opportunity to seize the enforcement mechanisms provided by the relevant IEL treaty. The argument based on a consistency test with IHL would also have the inconsistent effect that IEL norms would remain applicable between belligerents because they are consistent with IHL, like obligations of cooperation requiring notifications of data related to the war effort, although those norms are clearly incompatible with a state of war.

Another questionable argument frequently advanced by scholars,[37] or by institutions like the ILC,[38] is to build their position in favour of the continued applicability of IEL in warfare on the Advisory Opinion on the *Legality of the Threat or Use of Nuclear Weapons* (Nuclear Weapons Advisory Opinion) issued by the International Court of Justice (ICJ). Although, as detailed below, in this Opinion, the ICJ asserted that environmental considerations had to be taken into account when applying IHL,[39] it nonetheless stopped short of addressing the issue of the applicability of IEL in armed conflict.[40] The Court acknowledged that States' views on the matter were divided and expressly stated that "the issue [before it was] not whether the treaties relating to the protection of the environment [were or not] applicable during armed conflict".[41]

Finally, several scholars argue that IEL treaties must continue to apply between belligerents that are party to them, otherwise unlawful damage would be caused to the neutral States that are also party to those treaties.[42] This would also run against the indivisible nature of such treaties.[43] Such an argument is only partly relevant. First, it is only valid with respect to IEL treaties that regulate global environmental concerns, such as biodiversity, climate change or the ozone layer, the protection of which is sought for the benefit of all States. Second, even with respect to those treaties, the suspension or termination of their applicability

36 See e.g. European Court of Human Rights (ECtHR), *Hassan v. United Kingdom*, Appl. No. 29750/09, Judgment (Grand Chamber), 16 September 2014, paras 96–111; Inter-American Commission on Human Rights, *Coard et al. v. United States*, Case No. 10.951, 29 September 1999, paras 41–61; *Report on Terrorism and Human Rights*, OEA/Ser.L/V/II.116, Doc. 5 rev. 1 corr., 22 October 2002, paras 141 ff.; Inter-American Court of Human Rights, *The Ituango Massacres v. Colombia*, Preliminary Objections, Merits, Reparations and Costs, Judgment, Series C, No. 148, 1 July 2006, para. 179.

37 See e.g. Kirsten Stefanik, "The Environment and Armed Conflict: Employing General Principles to Protect the Environment", in Carsten Stahn, Jennifer S. Easterday and Jens Iverson (eds), *Environmental Protection and Transitions from Conflict to Peace*, Oxford University Press, Oxford, 2017, p. 93.

38 ILC Commentaries, above note 6, p. 136, para. 4 fn. 593.

39 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *ICJ Reports 1996* (Nuclear Weapons Advisory Opinion), para. 32.

40 For a similar view, see D. Dam-de Jong, above note 12, p. 174.

41 Nuclear Weapons Advisory Opinion, above note 39, para. 30.

42 D. Akande, above note 18, p. 184.

43 See e.g. Karine Mollard-Bannelier, *La protection de l'environnement en temps de conflit armé*, Pédone, Paris, 2001, p. 267.

might concern only certain obligations, the non-performance of which would not result in any damage to neutral States.

Personal and geographical scopes

Both IHL and IEL bind States and at least apply within the respective territory of those States. By contrast, it is unclear whether, unlike IHL, IEL is also binding upon armed groups and applies extraterritorially. This issue, which relates to the personal and geographical scopes of application of IEL, is generally overlooked by scholars.[44] It is, however, a crucial issue to consider given that many armed conflicts are non-international in nature, and therefore involve non-State armed groups, and given that IACs, including those involving situations of occupation, necessarily imply an extraterritorial dimension. This issue is thus in urgent need of further development by scholars.

As detailed elsewhere,[45] IEL could arguably be applicable to non-State armed groups under two main conditions. First, the applicable IEL should be well delineated. It would be meaningless to assert the applicability of IEL in general to non-State armed groups given the heterogeneous nature of IEL. One such delineation would involve basing the binding nature of IEL for non-State armed groups on the doctrine of legislative jurisdiction.[46] This implies that the applicable IEL would only include the rules binding upon the State against which, or in the territory of which, the non-State armed group is fighting, in addition to any rules that the non-State armed group would have unilaterally committed to respect. Second, as increasingly – but still controversially – claimed in relation to the applicability of IHRL to non-State armed groups, the relevant IEL norms should only be applicable to those groups that have enough capacity to comply with them, in particular to those having territorial control and exercising State-like functions.[47] Alternatively, the relevant IEL norms should be applicable to any non-State armed group, providing that the positive obligations of result are modulated and rephrased as obligations of means in order to be adapted to the specific material capacity of any such group.

Regarding the extraterritorial applicability of IEL,[48] it is argued that any enquiry on that issue must start from the terms of the treaties, as is usually

44 See, nonetheless, D. Dam-de Jong, above note 12, p. 125.

45 Raphaël van Steenberghe, "The Interplay between International Humanitarian Law and International Environmental Law: Towards a Comprehensive Framework for a Better Protection of the Environment in Armed Conflict", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022, pp. 1144–1146.

46 On this doctrine, see e.g. Jann K. Kleffner, "The Applicability of International Humanitarian Law to Organized Armed Groups", *International Review of the Red Cross*, Vol. 93, No. 882, 2011, pp. 445–449.

47 See e.g. Office of the UN High Commissioner for Human Rights, *International Legal Protection of Human Rights in Armed Conflict*, 2011, pp. 23–27; Tilman Rodenhäuser, *Organizing Rebellion Non-State Armed Groups under International Humanitarian Law, Human Rights Law, and International Criminal Law*, Oxford University Press, Oxford and New York, 2018, pp. 170–176. However, this claim remains controversial: see e.g. Jelena Pejic, "Conflict Classification and the Law Applicable to Detention and the Use of Force", in Elizabeth Wilmshurst (ed.), *International Law and the Classification of Conflicts*, Oxford University Press, Oxford, 2012, p. 84; Liesbeth Zegveld, *Accountability of Armed Opposition Groups in International Law*, Cambridge University Press, Cambridge, 2002, p. 54

48 R. van Steenberghe, above note 45, pp. 1142–1144.

done in relation to the more general issue of the continued applicability of IEL in armed conflict. Certain IEL treaties, like the 1992 Convention on Biological Biodiversity (Biodiversity Convention), are explicit on this issue and provide for their extraterritorial applicability or at least the extraterritorial applicability of some provisions. Otherwise, each rule must be scrutinized and its exterritorial applicability determined in light of its terms or the nature of the obligation that it provides. Ultimately, where no indication can be found in the treaty or its provisions, IEL treaties could be presumed to apply extraterritorially given the object and purpose of IEL, as IEL primarily aims at mitigating transboundary environmental harm. However, as suggested in relation to the applicability of IEL to non-State armed groups, the applicable IEL would only be extraterritorially binding upon States either if they have sufficient territorial control abroad or if the applicable positive obligations of result are mitigated and formulated as obligations of means.

Conflicting norms or interpretations

When the respective scopes of application of IHL and IEL overlap but the two bodies of law do not come into conflict, IEL is expected to apply alongside IHL without affecting it or being affected by it. In that case, IEL has no impact on IHL as such but only has impact on the regulation of armed conflict, by adding rules to those already provided by IHL on the matter. This is likely often to be the case for matters arsing before or after the armed conflict, since IHL contains few rules applying during those periods, unlike IEL.[49] In times of war, IEL may also play a complementary role with respect to IHL. Even in such cases, though, modulations of the applied IEL norms might then be needed, in cases where those norms, as further explained below, are not formulated in a sufficiently flexible way to accommodate the realities of war.

By contrast, when IHL conflicts with IEL, both bodies of law necessarily interplay. The notion of conflict is therefore pivotal to dealing with such interplay, but very few studies on the topic have delved into it. Most often, it is broadly stated that IHL should apply as the *lex specialis* and therefore prevail over IEL.[50] The most well-known type of conflict is the conflict of norms. As developed by one scholar in a study devoted to the interplay between IHL and

49 For such complementary role played by IEL with respect to certain aspects of the (protection of the) environment, see e.g. Karen Hulme, "Using International Law to Enhance Biodiversity and Nature Conservation during Armed Conflict", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022, pp. 1171–1176; Mara Tignino and Tadesse Kebebew, "The Legal Protection of Freshwater Resources and Related Installations during Warfare", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022, pp. 1221–1225; Jérôme de Hemptinne, "The Regulation of Hazardous Substances and Activities during Warfare", *Journal of International Criminal Justice*, Vol. 20, No. 5, 2022, pp. 1268–1270, 1283–1285.

50 See e.g. ILC Commentaries, above note 6, p. 136, para. 4; Daniëlla Dam-de Jong, "From Engines for Conflict into Engines for Sustainable Development", in Rosemary Rayfuse (ed.), *War and the Environment: New Approaches to Protecting the Environment in Relation to Armed Conflict*, Brill Nijhoff, Leiden and Boston, MA, 2014, pp. 909–910.

IEL,[51] such conflict might be construed in two ways: (1) either strictly, as implying that the norm of one body of law obliges its addressees to adopt conduct prohibited by a norm of the other body of law; or (2) more broadly, as involving norms that provide for different, but not contradictory, results. The ILC made such distinction in its work on the fragmentation of international law and opted for the second, broader, meaning.[52] It seems that this is the only conflict of norms that might exist between IHL and IEL, as arguably, no IHL norm imposes on belligerents an obligation to act in contravention to an applicable IEL norm.[53] IHL at most permits rather than prescribes belligerents to act in such a way. That permission encompasses acts such as causing damage to civilian objects, including the environment, as non-excessive incidental damage or as direct damage when and for such a time as that object becomes a military objective, providing that the damage is not widespread, long-term and severe.

Such permission is hardly compatible with the absolute prohibition provided in certain IEL treaties against causing any damage to parts of the environment that they protect. This is arguably the case with respect to Article 22 of the Biodiversity Convention, which provides that the Convention may "affect the rights and obligations of [the States Parties] deriving from any existing international agreement … [when] those rights and obligations would cause a serious damage or threat to biological diversity".[54] This is more clearly the case with respect to Article 6(3) of the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention), which provides that "[e]ach State Party to [the] Convention undertakes not to take any deliberate measures which might damage directly or indirectly the cultural and natural heritage … situated on the territory of other States Parties to this Convention".[55] Admittedly, as emphasized by certain scholars,[56] the relevant norms of the two bodies of law would not come into conflict if the belligerents were to decide to abstain from using the IHL permission to cause environmental damage, and to refrain from attacking a site or area protected by IEL treaties such as the Biodiversity Convention or the World Heritage Convention. This decision would include refraining from causing harm to a specific part of the environment even when it is considered a military objective or is so closely located to a military objective that it is likely to be subjected to incidental damage. However, such abstention would result merely from the free will of the belligerents and not from the law. In such a case, a conflict of norms must therefore be considered to exist between IHL and IEL and should be solved by displacing the inappropriate norm in accordance with the approach detailed below.

51 B. Sjöstedt, above note 7, p. 185.
52 ILC, *Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, UN Doc. A/CN.4/L.682, 13 April 2006, para. 25.
53 B. Sjöstedt, above note 7, p. 185.
54 Biodiversity Convention, above note 15, Art. 22.
55 Convention Concerning the Protection of the World Cultural and Natural Heritage, 1037 UNTS 15, 16 November 1972 (entered into force 17 December 1975) (World Heritage Convention), Art. 6(3).
56 B. Sjöstedt, above note 7, p. 186.

Legal scholarship often fails to identify another type of conflict between IHL and IEL, namely a conflict between interpretations of the two norms rather than between the norms themselves. Contrary to conflicts of norms, conflicts of interpretation arise when the applicable IEL norm contains open-ended terms which might be subject to either an interpretation based on IEL or an interpretation involving an IHL paradigm. This is the case, for example, with the open-textured Article 3 of the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), which provides that "[t]he Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands …, and as far as possible the *wise use* of wetlands in their territory".[57] A conflict of interpretation does not require displacing any norm, as is the case for conflicts of norms; rather, it requires interpreting the open-ended IEL term in light of the appropriate applicable regime. This still, nonetheless, implies displacing one regime in favour of another and therefore amounts to a conflict. This is well known in the practice regarding IHL–IHRL interplay. As stated by the ICJ in the Nuclear Weapons Advisory Opinion, the human right not to be *arbitrarily* deprived of one's life must be interpreted in light of the relevant IHL rules rather than the IHRL paradigm when applied in armed conflict.[58] Applying the same standard to IEL–IHL conflicts of interpretation would imply that, in the context of armed conflict, open-ended terms of an applicable IEL norm should be interpreted in light of relevant IHL rules. Such interpretation is needed in order to adapt IEL to the realities of war when applied in armed conflict.

The interpretation process

The application of IEL in times of war, with its potential adaptations in case of conflicts with IHL, is not the only process through which IEL may further enhance the protection of the environment in armed conflict; this may also be achieved by resorting to IEL as a means for interpreting IHL norms or concepts. Several suggestions as to how this can be done have already been put forward in legal literature, such as interpreting the IHL principles of proportionality and precaution relating to the conduct of hostilities in light of the IEL precautionary principle,[59] the IEL principle of prevention[60] or the IEL requirement to conduct an environmental impact assessment.[61] As will be seen in the following sections,

57 Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 996 UNTS 245, 2 February 1971 (entered into force 21 December 1975), Art. 3 (emphasis added). See also the open-ended Article II of the Convention on the Conservation of Migratory Species of Wild Animals, which provides that "[t]he Parties acknowledge the importance of … Range States … taking individually or in co-operation *appropriate* and necessary steps to conserve [migratory] species and their habitat": Convention on the Conservation of Migratory Species of Wild Animals as Amended, 19 ILM (1980), 23 June 1979 (entered into force 1 November 1983), Art. II (emphasis added).

58 Nuclear Weapons Advisory Opinion, above note 39, para. 25.

59 See e.g. K. Stefanik, above note 37, p. 115.

60 See B. Sjöstedt, above note 7, p. 119.

61 See Karen Hulme, *War Torn Environment*: *Interpreting the Legal Threshold*, Martinus Nijhoff, Leiden, 2004, pp. 82–83.

this interpretation process, whereby IHL is interpreted in light of IEL, is different from the application process in several respects. Notably, it does not raise the issue of the overlapping scopes of application of IHL and IEL or the issue of conflicts of norms or interpretation. In addition, it necessarily involves the interplay between the two bodies of law since IEL is incorporated into IHL. Legal scholarship is, however, often confused about the conditions for such interplay.

The irrelevance of the scope of application

Many scholars assume that IEL must apply in armed conflict in order to serve as a means for interpreting IHL.[62] Practice in fact shows that definitions have been borrowed from particular treaties to inform IHL concepts, although those treaties expressly provide that they do not apply in wartime. For instance, both the International Criminal Tribunal for the former Yugoslavia (ICTY)[63] and the Special Court for Sierra Leone (SCSL)[64] acknowledged that the notion of hostage-taking contained in the relevant IHL treaties could be built upon the definition provided in the 1979 International Convention against the Taking of Hostages (Hostage Convention). The Hostage Convention, however, contains a clause excluding its applicability in armed conflict in so far as the act of hostage-taking is regulated by those IHL treaties.[65] In addition, the salient aspects of the elements of the war crime of hostage-taking provided in the Rome Statute of the International Criminal Court (ICC) in relation to both IACs and NIACs are taken from the definition enshrined in the Hostage Convention.[66] Such an interpretative approach is also followed in relation to IEL: scholars do not hesitate to refer to definitions of the environment contained in certain IEL instruments in order to inform the meaning of the notion of the "natural environment" used in IHL,[67] even when those instruments expressly provide that they are not applicable in armed conflict.

In addition, even when the norm used to inform IHL applies in armed conflict, practice clearly shows that this norm must not necessarily have the same scope of application as the IHL interpreted rule.[68] In particular, that norm, unlike IHL, must not necessarily be extraterritorially applicable or applicable to non-State armed groups. Courts such as the ICTY[69] and the

62 See e.g. A. Dienelt, above note 7, p. 293; K. Stefanik, above note 37, pp. 103–104.

63 ICTY, *The Prosecutor v. Tihomir Blaškić*, Case No. IT-95-14-A, Judgment (Appeals Chamber), 29 July 2004, para. 639 fn. 1332.

64 SCSL, *The Prosecutor v. Issa Hassan Sesay et al.*, Case No. SCSL-04-15-A, Judgment (Appeals Chamber), 26 October 2009, paras 577–579, esp. para. 577 in relation to IACs.

65 See International Convention against the Taking of Hostages, 1316 UNTS 205, 17 December 1979 (entered into force 3 June 1983), Art. 12.

66 Knut Dörmann, "Article 8", in Otto Triffterer (ed.), *Commentary on the Rome Statute of the International Criminal Court*, Nomos Verlagsgesellschaft, Baden-Baden, 1999, p. 321.

67 See e.g. Marie G. Jacobsson, *Preliminary Report on the Protection of the Environment in Relation to Armed Conflicts*, UN Doc. A/CN.4/674, 30 May 2014, para. 83; B. Sjöstedt, above note 7, pp. 48, 128.

68 See below notes 69–71.

69 See e.g. ICTY, *The Prosecutor v. Milorad Krnojelac*, Case No. IT-97-25-T, Judgment (Trial Chamber), 15 March 2002, para. 181; ICTY, *The Prosecutor v. Zejnil Delalić et al.*, Case No. IT-96-21-T, Judgment (Trial

ICC,[70] as well as institutions like the ICRC,[71] have abundantly resorted to IHRL, the application of which to non-State armed groups remains controversial, to inform IHL norms applicable to any NIAC and, therefore, to any non-State armed group party to such conflict.

Indeed, the underlying rationale for such an interpretive approach is not that both the interpretative and interpreted norms apply in armed conflict[72] or, more generally, that they have a similar scope of application. It is rather that the notions contained in these norms are similar and that one body of law provides for a workable definition for the other. This is what provides the interpretation process with added value for strengthening the protection of the environment in armed conflict. Under the application process, the potential for IEL to enhance that protection is indeed dependent upon IEL's own scope of application, which is seemingly more limited than that of IHL. Notably, as explained above, it is unclear whether IEL could apply to non-State armed groups and extraterritorially in armed conflict. By contrast, when IEL is incorporated into IHL through the interpretation process, it becomes part of IHL and indisputably applies to any conduct to which the interpreted IHL norm applies, including to non-State armed groups and extraterritorially.

That being said, as with the application process, IEL might require adaptations when being incorporated into an IHL norm, notably in order to conform to IHL structural features such as the principle of equality between belligerents. This is the exact principle that pushed the ICTY to exclude the condition of the involvement of a State agent required by IHRL in the definition of torture when using that definition to inform the same notion under IHL.[73] Adaptations of the IEL interpretative standard may also be needed to accommodate the limited

Chamber), 16 November 1998, paras 534–540; ICTY, *The Prosecutor v. Dragoljub Kunarac et al.*, Case Nos IT-96-23-T, IT-96-23/1-T, Judgment (Trial Chamber), 22 February 2001, paras 519–520.

70 See e.g. ICC, *The Prosecutor v. Al Hassan Ag Abdoul Aziz Ag Mohamed Ag Mahmoud*, Case No. ICC-01/12-01/18-461-Corr-Red, Corrigendum to the Decision on the Confirmation of Charges (Pre-Trial Chamber), 13 November 2019, paras 378–384 as well as 483 and 492.

71 See e.g. ICRC, *Commentary on the Third Geneva Convention: Convention (III) Relative to the Treatment of Prisoners of War*, 2nd ed., Geneva, 2020, paras 710–731, esp. paras 715, 718, 723, 724, 728 (ICRC Commentary on GC III). For remarks that apparently confuse the "interpretation process" with the "application process", however, see paras 94–95.

72 Although in the *The Iron Rhine ("Ijzeren Rijn") Railway Case*, the Permanent Court of Arbitration (PCA) stated, in the French version, that "les normes de protection de l'environnement … peuvent s'avérer pertinentes pour l'interprétation des traités … [dans la mesure où elles sont] *applicables* aux relations entre les Parties" (emphasis added), the term "applicable" meant "binding" upon the parties. This is confirmed by the English version, which uses the term "relevant" rather than "applicable". PCA, *The Iron Rhine ("Ijzeren Rijn") Railway Case (Belgium v. The Netherlands)*, Award, 24 May 2005, para. 60, French version available at: https://pcacases.com/web/sendAttach/481; English version available at: https://pcacases.com/web/sendAttach/478.

73 See e.g. ICTY, *Kunarac*, above note 69, para. 496. In earlier cases, the Tribunal extended that requirement to both State and non-State parties (see e.g. ICTY, *Delalić*, above note 69, para. 473; ICTY, *The Prosecutor v. Anto Furundžija*, Case No. IT-95-17-1-T, Judgment (Trial Chamber), 10 December 1998, para. 162). In that sense, the ICRC position in favour of the incorporation of certain IHRL fair trial guarantees in Article 3 common to the four Geneva Conventions of 1949, but only on the side of the State and not the non-State party, seems misleading (see ICRC Commentary on GC III, above note 71, para. 715). This is indeed contrary to the principle of equality between belligerents.

capacities of States when acting abroad, or those of armed groups. It is highly unfortunate in this respect that the ICC failed to make such adaptations in the *Al Hassan* case, when it interpreted the IHL fair trial guarantees applicable in NIACs in light of IHRL.[74] The Court incorporated in its entirety the relevant IHRL regime in those IHL guarantees, including certain human rights that may hardly be complied with by any armed group, such as the right for the accused to take proceedings before a court in order to decide on the legality of the accused's deprivation of liberty.[75]

The distinction between IEL and environmental considerations

Another significant confusion in legal scholarship regarding the interpretation process is the lack of distinction between IEL and environmental considerations as a means for interpreting IHL.[76] While IEL is the body of codified and customary international law that deals with the protection of the environment, environmental considerations are a vaguer concept that does not stick to the law and includes any concern on the protection of the environment.[77]

The ICJ notably advanced the view that environmental considerations must be taken into account to interpret IHL norms in the 1996 Nuclear Weapons Advisory Opinion. The Advisory Opinion is often misunderstood by scholars. Besides being silent on the issue of the continued applicability of IEL treaties in armed conflict, it does not indicate whether the IHL conditions of necessity and proportionality – or even IHL in general – must be interpreted in light of IEL. It merely refers to environmental considerations or factors as interpretative means.

Three ICJ statements, which are often indistinctly mentioned in legal literature,[78] are of relevance here. In the first one, the Court asserts that "States must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate military objectives".[79] As emphasized by certain States,[80] that assertion is ambiguous as it is unclear

74 See e.g. R. van Steenberghe, "The Impacts of Human Rights Law on the Regulation of Armed Conflict: A Coherency-Based Approach to Dealing with both the 'Interpretation' and 'Application' Processes", *International Review of the Red Cross*, Vol. 104, No. 919, 2022, pp. 1377–1378. On that incorporation of IHRL into IHL for the purpose of defining the war crime of sentencing without due process, see e.g. Katharine Fortin, "The Procedural Right to a Remedy When the State has Left the Building? A Reflection on Armed Groups, Courts and Domestic Law", *Journal of Human Rights Practice*, Vol. 14, No. 2, 2022, p. 407.

75 ICC, *Al Hassan*, above note 70, para. 384.

76 See e.g. Phoebe N. Okowa, "Natural Resources in Situations of Armed Conflict: Is There a Coherent Framework for Protection?", *International Community Law Review*, Vol. 9, No. 3, 2007, p. 249.

77 As emphasized by States during the ILC's work on the protection of the environment in relation to armed conflicts (see comments by France in ILC, below note 80, p. 81), there is no admitted definition of that concept under international law.

78 For indistinct references to those three statements with respect to different issues, see in particular ILC Commentaries, above note 6, fn. 593, 626, 650, 655, 744, 748.

79 Nuclear Weapons Advisory Opinion, above note 39, para. 30.

80 See e.g. ILC, *Protection of the Environment in Relation to Armed Conflicts: Comments and Observations Received from Governments, International Organizations and Others*, UN Doc. A/CN.4/749, 17 January 2022, p. 88 for Israel and p. 89 for the United States.

whether it deals with *jus ad bellum* or IHL: while immediately preceded by considerations specific to the right of self-defence and referring to the condition of necessity rather than the IHL concept of "military necessity", the Court statement nonetheless ends with the IHL notion of "legitimate military objective".

The second relevant ICJ statement is much clearer and univocally deals with IHL. The Court expressly acknowledges "the general view according to which environmental considerations constitute one of the elements to be taken into account in the implementation of the principles of the law applicable in armed conflict".[81] Only environmental considerations, rather than IEL, are mentioned as potential interpretative means for IHL.

Admittedly, in the third relevant statement, the Court refers to IEL and asserts that

> the existing international law relating to the protection and safeguarding of the environment … indicates important environmental factors that are properly to be taken into account in the context of the implementation of the principles and rules of the law applicable in armed conflict.[82]

However, the interpretative standard envisaged by the Court is not IEL as such but the "environmental factors" indicated by IEL. At most, such a statement shows that there might be a thin line between IEL and environmental considerations or factors. This is arguably the case when environmental concerns are expressed in the preamble of IEL treaties, like the fundamental role of biological diversity in "maintaining life sustaining systems of the biosphere", as indicated in the preamble of the Biodiversity Convention. It is controversial whether such concerns may indeed be used to inform IHL notions, like the test of excessive damage under the IHL rule of proportionality, as environmental considerations or as part of IEL as such.[83]

The distinction between IEL and environmental considerations nonetheless remains noteworthy. Obviously, it is only when IEL is used to interpret IHL that interplay might exist between the two bodies of law. More fundamentally, the mechanism designed to guide such interplay varies depending upon whether IHL is interpreted in light of IEL or environmental considerations. The mechanisms for the interpretation of IHL through IEL are more specific and constraining, notably because, as developed in detail below, all the States bound by the interpreted IHL norm must normally also be bound by the interpretative IEL rule. Such a constraint does not apply to the interpretation of IHL in light of environmental considerations. It is, however, unclear which particular kind of interpretation is then involved and through which specific mechanisms such an interpretation may legally be justified. The least unsatisfactory solution is to classify it under the generic term of "evolutionary interpretation", which covers interpretations made by several courts in many fields of international law on the basis of various mechanisms in order to adapt the terms of a treaty not only to

81 Nuclear Weapons Advisory Opinion, above note 39, para. 32.
82 *Ibid.*, para. 33.
83 R. van Steenberghe, above note 74, p. 1132.

the developing international legal context but also to evolving values, facts and concerns.[84]

In any case, it seems useful that environmental considerations may act as an autonomous means for the interpretation of IHL. However, in the last steps of the ILC's work on the protection of the environment in relation to armed conflicts, the ICRC[85] and some States[86] opposed the draft principle that "[e]nvironmental considerations shall be taken into account when applying the [IHL] principle of proportionality and the [IHL] rule on military necessities".[87] One of the reasons for this was that the notion of "environmental considerations" was too vague and that, in turn, this would risk undermining the application of the rule of proportionality. The draft principle has therefore been deleted and is considered as implicitly contained in the preceding draft principle, which acknowledges "the application of the law of armed conflict [in particular the principles and rules of distinction, proportionality and precaution] to the environment".[88]

However, it is mainly on the basis of the (vague) notion of environmental considerations (or concerns) that the environment historically started to be considered as a civilian object or a(n) (enemy) property under IHL. The relevant IHL rules have then been considered as applicable to the environment, including the main IHL rules on the conduct of hostilities as well as those dealing with (enemy) property under the control of the adversary, such as in cases of occupation.

This can be traced back to the aftermath of the 1990–91 Gulf War. For example, participants at the Conference of Experts on the Use of the Environment as a Tool of Conventional Warfare, held in Ottawa in 1991, emphasized that "the application and development of the law of armed conflict [had] to [take] account of the evolution of *environmental concerns* generally" and asserted that the "customary laws of war … now [included] a requirement to avoid unnecessary damage to the environment".[89] In its Resolution 47/37 of 1992, the UN General Assembly also recognized the application to the environment of the Hague rule that prohibits "the destruction … of property not justified by military necessity and carried out unlawfully and wantonly".[90] In its Nuclear Weapons Advisory Opinion, the ICJ expressly viewed the General Assembly's assertion as being due to the fact that the Assembly took into account "*environmental considerations* … in the implementation of principles of the law applicable in armed conflict".[91]

84 For a comprehensive study of this type of interpretation, see e.g. Georges Abi-Saab, Kenneth Keith, Gabrielle Marceau and Clément Marquet (eds), *Evolutionary Interpretation and International Law*, Hart, Oxford, 2020.

85 ILC, above note 80, p. 181.

86 See e.g. comments by France in *ibid.*, p. 81.

87 *Protection of the Environment in Relation to Armed Conflicts: Text and Titles of the Draft Principles Provisionally Adopted by the Drafting Committee on First Reading*, UN Doc. A/CN.4/L.937, 6 June 2019, Draft Principle 15.

88 PERAC Principles, above note 30, Principle 14.

89 Conference of Experts, above note 11, paras 9, 11 (emphasis added).

90 UNGA Res. 47/37, 25 November 1992, Preamble.

91 Nuclear Weapons Advisory Opinion, above note 39, para. 32 (emphasis added).

The recognition of the application of the relevant general IHL rules to the environment, which is now well established, constituted a major step towards strengthening the protection of the environment in armed conflict – in fact, according to Hulme, this recognition "has done more to protect [the environment] than any environmentally specific rule of international humanitarian law".[92] That being said, the notion of environmental considerations should still be used to further protect the environment in armed conflict. Its vagueness might be seen as an advantage rather than an obstacle to that end; indeed, it may constitute a flexible means for adapting the interpretation or application of IHL to the various and evolving environmental concerns. Such a role is clearly apparent with respect to IHL rules like the principle of proportionality. Environmental considerations might be helpful for those who plan or prepare an attack when determining the expected environmental damage to be balanced against the direct and concrete military advantage anticipated from that attack. Based on recognized scientific knowledge, which may evolve over time, or any information that commanders knew or should have known at the time of the attack, those considerations are particularly useful for assessing the weight or value of such damage and its foreseeability.[93] For example, attackers might know or should have known from information available in recognized environmental studies or from information specifically transmitted to them that the area to be attacked is of particular importance for biodiversity and that the destruction of that area would cause the extinction of a species, which would in turn affect an entire ecosystem of great value for a particular civilian population.

Mechanisms guiding IHL–IEL interactions

As demonstrated above, IHL–IEL interplay only arises in case of conflicts of norms or interpretation under the application process or when IEL is incorporated into IHL under the interpretation process. Formal mechanisms have been identified in legal scholarship, which may provide guidance on the outcome of such interplay, though certain scholars argue that solutions must be found beyond such mechanisms in some cases. These formal mechanisms will accordingly be first examined before appraising the approaches providing solutions that go beyond such mechanisms.

Starting with formal mechanisms

Two main formal mechanisms are considered in legal scholarship with respect to IHL–IEL interplay, namely the principle of systemic integration[94] and the *lex*

92 Karen Hulme, "Taking Care to Protect the Environment against Damage: A Meaningless Obligation?", *International Review of the Red Cross*, Vol. 92, No. 879, 2010, p. 678.

93 See e.g. Cordula Droege and Marie-Louise Tougas, "The Protection of the Natural Environment in Armed Conflict – Existing Rules and Need for Further Legal Protection", in R. Rayfuse (ed.), above note 50, pp. 21–23. See also ICRC, above note 5, sections 117–118.

94 See e.g. ILC Commentaries, above note 6, p. 136, para. 4.

specialis principle,[95] although the former is much less often mentioned than the latter. Moreover, a series of other specific mechanisms are proposed by scholars, but only in relation to the interpretation process. This section will review the two formal mechanisms and those other mechanisms.

The principle of systemic integration

The principle of systemic integration is based on Article 31(3)(c) of the Vienna Convention on the Law of Treaties (VCLT), according to which a treaty shall be interpreted in light of "any relevant rules of international law applicable in the relations between the parties". Scholars have raised some objections against the principle's applicability to IEL–IHL interplay.[96] The first objection concerns the interplay arising in case of a conflict of norms. This objection is clearly valid: the principle of systemic integration is only relevant when interpreting a norm or a concept, not for settling a conflict between two norms whose content is already clear.[97]

Two other, more controversial objections are raised in legal scholarship. The first is the condition of the identity of the parties, according to which parties to an interpreted treaty must be the same as (or at least include) the parties to the treaty serving as a means for interpretation.[98] Otherwise, interpretations based on a treaty could be binding upon States not party to that treaty, which would hardly be acceptable for those States. The second, more disputable objection is that only legal sources can be used as a standard for interpretation. It is true, as emphasized in legal scholarship,[99] that these two objections are particularly relevant with respect to IEL–IHL interplay due to the specific features of IEL, notably that most IEL treaties are ratified by far fewer States than IHL treaties, and that soft-law instruments play a major role in the growth and

95 See e.g. J. d'Aspremont, above note 12, p. 17 fn. 82.

96 See B. Sjöstedt, above note 7, pp. 192–195. See also Dienelt's reflections on those objections, in A. Dienelt, above note 7, pp. 222, 281

97 Admittedly, in the *Hassan* case, the ECtHR resorted to the principle of systemic integration to solve a genuine conflict of norms (ECtHR, *Hassan*, above note 36, para. 102). There was a conflict between (1) Article 5 of the European Convention on Human Rights (ECHR), which allows depriving persons of their liberty only for limitative reasons and which subjects such deprivation of liberty to judicial review, and (2) the IHL rules applicable to prisoners of war and civilian internees in IACs, which permit the detention of those persons for security reasons and do not subject that detention to any review with respect to prisoners of war or provide the possibility for non-judicial review regarding the detention of civilians. The Court gave priority to the IHL rules and presented this outcome as the result of an interpretation of Article 5 in light of those IHL rules, on the basis of the principle of systemic integration (*ibid.*, paras 108–111). However, this was highly criticized both by certain judges of the Court (see e.g. *ibid.*, Partly Dissenting Opinion of Judge Spano, Joined by Judges Nicolaou and Kalaydjieva, pp. 65–66, para. 18) and by scholars (see e.g. Marko Milanovic, "A Norm Conflict Perspective on the Relationship between International Humanitarian Law and Human Rights Law", *Journal of Conflict and Security Law*, Vol. 14, No. 3, 2010, p. 475), who emphasized that the Court's reasoning actually involved rewriting the ECHR.

98 On that requirement, see e.g. Ulf Linderfalk, "Who are 'the Parties'? Article 31, Paragraph 3(c) of the 1969 Vienna Convention and the 'Principle of Systemic Integration' Revisited", *Netherlands International Law Review*, Vol. 55, No. 3, 2008.

99 See e.g. B. Sjöstedt, above note 7, p. 195.

implementation of IEL. Those objections must not, however, be overemphasized. They do not concern the interpretation of IEL in light of IHL under the application process: first, States parties to the IEL treaty are typically also parties to the IHL treaty, and, second, the IHL interpretative standard is normally a legal norm.

That being said, even when concerning the interpretation of IHL by IEL under the interpretation process, these objections may be mitigated. Regarding the condition of the identity of the parties, it must first be observed that certain IEL treaties, like the Biodiversity Convention, the World Heritage Convention and the Ramsar Convention, are nearly universally ratified; in fact, some have more ratifications than certain IHL conventions, including the two Additional Protocols to the 1949 Geneva Conventions. Second, norms provided in an IEL treaty may be used to interpret any IHL rule, even though that treaty is ratified by a small number of States, providing that the IEL interpretative norm also has a customary nature or that the interpretation of IHL based on the IEL treaty is at least tolerated or accepted by the States not party to it.[100]

Moreover, it is not uncommon that States party to an armed conflict, although bound by the same IHL rules according to the principle of equality between belligerents, will have a different interpretation of those rules. That practice could provide an alternative as well: an interpretation of IHL based on IEL could only be binding upon the States party to the interpretative IEL treaty. Although sound at the theoretical level, such an approach risks being unworkable on the ground. It would lead to a fragmentation of the meanings of the IHL rules, depending upon which IEL treaties have been ratified by the belligerents. Ultimately, if the requirement of the identity of the parties cannot be fulfilled even when mitigated, the interpretation of the IHL norm could be based upon the environmental considerations underlying the interpretative IEL treaty, providing that those considerations are based upon recognized scientific knowledge.

Regarding the requirement that the interpretative standard must be a rule of law, first, practice shows cases in which soft-law environmental instruments, such as Agenda 21,[101] have been relied upon among the materials used for the interpretation of a treaty in accordance with the principle of systemic integration.[102] Second, no problem arises when the norm or principle whose legal status is controversial is expressly provided in a treaty, such as the precautionary principle contained in the 2000 Cartagena Protocol on Biosafety to the Biodiversity Convention.[103] Again, alternatively, environmental considerations could be used as a last resort to inform the IHL norm or concept. In any case,

100 See e.g. Campbell McLachlan, "The Principle of Systemic Integration and Article 31(3)(c) of the Vienna Convention", *International and Comparative Law Quarterly*, Vol. 54, 2005, pp. 314–315.

101 UN Conference on Environment and Development, "Agenda 21", Rio de Janeiro, 3–14 June 1992, available at: https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf.

102 See World Trade Organization (WTO), *United States - Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R, DSR 1998:VII, 12 October 1998, pp. 2793–2798, para. 130.

103 Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 2226 UNTS 208, 29 January 2000 (entered into force 11 September 2003), Art. 10(6).

while the principle of systemic integration can validly be used to guide the incorporation of IEL into IHL under the interpretation process, caution is required when proceeding to such an incorporation.

The lex specialis *principle*

Although often mentioned in legal literature[104] and by States[105] in relation to IHL–IEL interplay, the *lex specialis* principle is subject to strong criticisms by the few scholars who have devoted an in-depth analysis to the topic.[106] They first emphasize that the *lex specialis* principle can only act as a mechanism for solving conflicts between IHL and IEL in circumstances where both fields of law apply but provide different results.[107] Admittedly, the *lex specialis* principle is better suited than the principle of systemic integration in that respect, since, as demonstrated above, the principle of systemic integration is not a tool for settling conflicts of norms.

However, the *lex specialis* principle can also arguably act as an interpretative tool for guiding the interpretation of IEL in light of IHL under the application process. Such a role is clearly acknowledged in relation to IHL–IHRL interplay: there is indeed an abundant and uniform practice confirming that the *lex specialis* principle may be used to settle conflicts of interpretation that may arise between IHL and IHRL, and that its effect is to prioritize the interpretation based on the special regulation.[108] It is therefore argued that, even though the *lex specialis* principle has traditionally been seen as a rule of norm conflict resolution, together with the *lex superior* and *lex posterior* principles,[109] such meaning has evolved overtime. In light of contemporary practice, the *lex specialis* principle is now also recognized, in accordance with numerous scholars[110] and the ILC,[111] as a tool for solving conflicts of interpretation in order to avoid conflicts of norms between two bodies of law.

In fact, the principle of *lex specialis* seems better suited than the principle of systemic integration in the context of the application process, since its role is precisely to offer a solution by prioritizing the special rule in order to settle a conflict, whether of norms or interpretation. On the other hand, the principle of systemic integration appears to be better suited than the principle of *lex specialis* to act as a tool for guiding the incorporation of IEL into IHL under the interpretation process. That process does not involve solving any conflict of norms or interpretation. It merely consists in interpreting or clarifying an unclear

104 See e.g. D. Dam-de Jong, above note 50, p. 210.
105 See e.g. statements from Belarus (UN Doc. A/C.6/70/SR.24, 4 December 2015, para. 15); Greece (UN Doc. A/C.6/71/SR.29, 2 December 2016, para. 17); the United States (UN Doc. A/C.6/73/SR.29, 10 December 2018, para. 41); and South Africa (UN Doc. A/C.6/73/SR.30, 6 December 2018, para. 3).
106 B. Sjöstedt, above note 7, pp. 166–169; A. Dienelt, above note 7, pp. 278–279.
107 B. Sjöstedt, above note 7, pp. 163–166.
108 See e.g. the case law mentioned in R. van Steenberghe, above note 74, pp. 1362–1363 fn. 112.
109 See e.g. ILC, above note 52, para. 18.
110 See e.g. Gloria Gaggioli, *L'influence mutuelle entre les droits de l'homme et le droit international humanitaire à la lumière du droit à la vie*, Pedone, Paris, 2013, p. 59.
111 ILC, above note 52, para. 56.

or undefined concept against a general legal background, which is the function classically assigned to the principle of systemic integration.[112] The traditional rationale underlying that principle is that a legal concept or norm must be read in light of its surrounding legal context in order to safeguard the coherency of the international legal system as a whole.

That being said, even when admitting that the *lex specialis* principle can act as a tool for solving conflicts of norms, some scholars nonetheless emphasize that this principle is meaningless. They argue that it lacks any normative content that would allow the identification of which rule is special and must be prioritized.[113] However, the fact that the *lex specialis* principle is a mere formal tool does not mean that it should be overlooked. Its function is not to provide normative content, but rather to indicate that, in case of conflict, one norm or interpretation must displace the other. There is therefore no reason to set the principle aside – instead, it must be supplemented by a test, based on substantial considerations, which allows for determining the rule or interpretation that must take precedence over the other one in a particular case. The same is actually true with respect to the principle of systemic integration since, as a formal mechanism, it does not provide any normative indication on which rule is "relevant" and must be taken into account to interpret another rule or concept. As developed below, this might be resolved by adopting a coherency-based approach.

Other mechanisms?

The principle of systemic integration and the *lex specialis* principle are not the only mechanisms mentioned in legal literature in relation to IHL–IEL interplay. Scholars also refer to other mechanisms with respect to the incorporation of IEL into IHL under the interpretation process; however, those mechanisms do not prove useful or reliable.

The first of such mechanisms, notably mentioned by the ILC Rapporteur on the Protection of the Environment in Relation to Armed Conflicts,[114] is the "evolutionary interpretation", which means that a norm must be interpreted taking into account the legal or factual context existing when the norm is interpreted rather than when it emerged. This seems particularly appropriate for the interpretation of IHL in light of IEL since most IHL treaties were drafted when commitment to the protection of the environment was not as significant as it is today and when IEL was non-existent or had just started emerging. However, the notion of "evolutionary interpretation" is a generic term, the purpose of which is merely to emphasize the type of interpretation that is sought, namely an evolutive interpretation. It is not an interpretative mechanism as such and it must therefore be based on true interpretative mechanisms. With respect to the

112 *Ibid.*, paras 413–414.
113 B. Sjöstedt, above note 7, p. 167; A. Dienelt, above note 7, p. 279.
114 M. Lehto, above note 6, para. 245. See also, as examples of interpreting the law of occupation in light of subsequent legal developments, PERAC Principles, above note 30, Principles 19, 20.

incorporation of contemporary international law, and in particular IEL, into IHL, it seems that an evolutionary interpretation may be achieved through the principle of systemic integration. It is illustrative that several judicial decisions in which an evolutionary interpretation has been sought expressly or implicitly refer to the principle of systemic integration.[115]

The second mechanism is the "ordinary meaning", as provided under Article 31(1) of the VCLT.[116] Unlike the preparatory works of that article, case law suggests that the ordinary meaning of a term might include not only its everyday meaning but also its meaning derived from international law, including treaties.[117] This means that an IHL term could be informed by IEL treaties on the basis of the ordinary meaning of that term. However, when courts rely on international law to clarify the ordinary meaning of a term, they usually seek the meaning that is commonly shared under that law.[118] This actually amounts to identifying the customary meaning, but it comes close to interpreting a term based on the principle of systemic integration, which, as already seen, involves the interpretation of a term or norm against the general legal background. In that sense, the ordinary meaning would not allow interpretations that are not permitted under the principle of systemic integration, such as interpreting the IHL concept of the "natural environment" in light of a definition provided by a particular IEL instrument.[119] Moreover, unlike the principle of systemic integration, the ordinary meaning is not specific to interpretations based on the law but also serves interpretations based on various elements, including dictionaries or technical manuals.[120]

A third mechanism is the Martens Clause, as provided in several IHL treaties and in customary law.[121] While the "greening" of that clause seems now

115 See e.g. WTO, above note 102, paras 134 and 158, footnote 157; PCA, above note 72, paras 59 and 79; ICJ, *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970)*, Advisory Opinion, *ICJ Reports 1971*, para. 53 (as interpreted by scholars as applying the principle of systemic integration: see e.g. Ian Sinclair, *The Vienna Convention on the Law of Treaties*, Manchester University Press, Manchester, 1984, p. 140).

116 See e.g. B. Sjöstedt, above note 7, pp. 46, 164; D. Dam-de Jong, above note 50, p. 210.

117 See e.g. Ulf Linderfalk, *On the Interpretation of Treaties: The Modern International Law as Expressed in the 1969 Vienna Convention on the Law of Treaties*, Springer, Dordrecht, 2007, pp. 64–73.

118 See e.g. ICJ, *Kasikili/Sedudu Island (Botswana v. Namibia)*, Judgment, *ICJ Reports 1999*, para. 27; International Centre for Settlement of Investment Disputes, *Asian Agricultural Products Ltd v. Republic of Sri Lanka*, Award, 27 June 1990, *International Law Report*, Vol. 106, para. 47.

119 For interpretations of the notion of "environment" in light of an IEL instrument, see e.g. above note 67.

120 U. Linderfalk, above note 117, pp. 70–73.

121 The Martens Clause provides that "in cases not covered by the law in force, the human person remains under the protection of the principles of humanity and the dictates of the public conscience": see AP I, Art. 1. See also Convention (IV) respecting the Laws and Customs of War on Land and its Annex: Regulations Concerning the Laws and Customs of War on Land, 18 October 1907 (entered into force 26 January 1910), Preamble, available at: https://ihl-databases.icrc.org/en/ihl-treaties/hague-conv-iv-1907; Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of 12 August 1949, 75 UNTS 31 (entered into force 21 October 1950), Art. 63; Geneva Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea of 12 August 1949, 75 UNTS 85 (entered into force 21 October 1950), Art. 62; Geneva Convention (III) relative to the Treatment of Prisoners of War of 12 August 1949, 75 UNTS 135 (entered into force 21 October 1950), Art. 142; Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War of 12 August 1949, 75 UNTS 287 (entered into

well established, meaning that the clause also applies to the protection of the environment,[122] it is argued in legal literature that this clause can act as a legal mechanism for the interpretation of IHL in light of IEL.[123] One proposed example is the interpretation of the IHL principle of precaution in light of the IEL principle of prevention.[124] However, such an outcome may again be achieved through the normal operation of the principle of systemic integration. Moreover, it seems preferable to rely on that classical mechanism, the use of which is well known in practice, rather than on a clause the legal effects of which are still uncertain and debated.[125]

The last mechanism is based on general principles of international law. Although the definition of such principles remains debated, the functions ascribed to them vary and include serving as a guidance for interpretation processes.[126] However, the general principles envisaged in legal literature to guide the interpretation of IHL in light of IEL merely consist in IEL principles, such as the precautionary principle, the incorporation of which into IHL is sought.[127] Yet, principles cannot at the same time be incorporated into a norm and guide such an incorporation process. The problem is that the mobilized principles are part of the IEL primary norms or at least have a specific normative-like nature when not expressly provided in treaties. Instead, principles designed to guide the interpretation of a rule of a legal system must be all-encompassing. They must constitute the underlying rationale for the whole of that system and hold all its rules together in a meaningful way. As detailed below, such an approach is possible with respect to IHL–IEL interplay, if both bodies of law are considered as being part of one common legal system and the coherency of that system is ensured by a foundational principle.

Going beyond the formal mechanisms

The two recent comprehensive studies on the interplay between IHL and IEL have emphasized the shortcomings of the *lex specialis* principle and the principle of systemic integration.[128] Each of them therefore proposes an approach, namely the "reconciliatory approach"[129] and the "multi-layered approach",[130] that goes beyond these above-mentioned mechanisms. This section will accordingly

force 21 October 1950) (GC IV), Art. 158; Protocol Additional (II) to the Geneva Conventions of 12 August 1949 and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978), Preamble.

122 See e.g. ICRC, above note 5, p. 80; PERAC Principles, above note 30, Principle 12.

123 B. Sjöstedt, above note 7, p. 118.

124 *Ibid.*, pp. 119–120.

125 See e.g. Antonio Cassese, "The Martens Clause: Half a Loaf or Simply Pie in the Sky?", *European Journal of International Law*, Vol. 11, No.1, 2000.

126 See e.g. Joseph Raz, "Legal Principles and the Limits of Law", *Yale Journal of International Law*, Vol. 81, 1972, p. 841.

127 K. Stefanik, above note 37, pp. 102–115.

128 B. Sjöstedt, above note 7, esp. pp. 175–212; A. Dienelt, above note 7.

129 B. Sjöstedt, above note 7, esp. pp. 175–212.

130 A. Dienelt, above note 7.

examine these two approaches – however, it will be shown that such approaches themselves raise certain difficulties. A third approach, based on the notion of normative coherency of legal systems, will therefore be proposed.

The reconciliatory approach

Under the reconciliatory approach, which has been developed by Sjöstedt, reconciliation is sought between multilateral environmental agreements (MEAs) and IHL. Such reconciliation is mainly based on the broad mandate and non-confrontational character of the bodies established by MEAs, as well as on the flexible terms of the provisions enshrined in these agreements.[131] It is argued that those treaty bodies are then able to take diverse measures adapted to the concrete realities of war and therefore to enhance the protection of the environment in armed conflict. This approach is presented as going beyond the traditional mechanisms designed to solve normative tensions between IHL and IEL because those mechanisms are considered as inapplicable in such cases.

The reconciliatory approach nonetheless admits that the principle of systemic integration might constitute one of the available means when IHL is interpreted in light of IEL.[132] As emphasized above, however, the operation of that principle raises much more concern in that case than in the case where IEL is interpreted in light of IHL to solve normative tensions when both bodies of law are applicable. Moreover, while giving a key reconciliatory role to treaty bodies, the approach seems to overestimate the power of those bodies by contending that they "can overlook the limitations of the interpretation tools because they are empowered to perform tasks beyond treaty interpretation in their application of the MEA provisions".[133] In fact, any treaty body is normally bound to apply the relevant mechanisms provided under general international law to settle normative tensions between the different branches of that law. This is clearly confirmed by the practice of the various treaty bodies supervising the application of IHRL treaties,[134] or the World Trade Organization (WTO) Agreements.[135] When faced with interplay between branches of international law, including IEL, those treaty bodies use the relevant formal mechanisms, such as the *lex specialis* principle or the principle of systemic integration.

More fundamentally, it is questionable whether the true purpose of the reconciliatory approach is to serve as a theoretical guiding tool for the interplay between IEL and IHL. Its purpose seems rather to refute the view recurrently upheld in legal scholarship[136] that the open-ended and malleable nature of the

131 B. Sjöstedt, above note 7, pp. 197–206.
132 *Ibid.*, pp. 46, 164, 168–169.
133 *Ibid.*, p. 194.
134 See e.g. the case law mentioned in R. van Steenberghe, above note 74, pp. 1362–1363 fn. 112.
135 See WTO, above note 102, para. 130.
136 See e.g. M. N. Schmitt, above note 17, p. 50; Daniel Bodansky, *The Art and Craft of International Environmental Law*, Harvard University Press, Cambridge, MA, 2010, p. 226; Anthony Leibler, "Deliberate Wartime Environmental Damage", *California Western International Law Journal*, Vol. 23, No. 1, 1992, p. 80; A. L. Bunker, above note 19, p. 211.

MEA provisions renders those agreements unhelpful for regulating conduct in armed conflict and strengthening the protection of the environment in such situations. Under the reconciliatory approach, such flexibility, combined with the broad mandate of the treaty bodies, is instead considered as crucial in reconciling IEL with armed conflict and then in allowing IEL to play a critical role in complementing IHL with respect to the protection of the environment in warfare.

The three illustrative cases of normative tensions against which the reconciliatory approach is tested seem to confirm that such an approach is not actually designed to provide a theoretical framework to deal with the interplay between IHL and IEL. The first case involves a conflict of norms between the IHL permission to cause damage to the environment and the absolute prohibition against causing such damage provided in the World Heritage Convention. It is acknowledged that requiring a belligerent to refrain from launching an attack causing such damage "would only restrict the application of the law of armed conflict while the World Heritage Convention applies fully" and that reconciliation might not be possible in that case.[137] The two other cases, which actually involve conflicts of interpretation, are solved through the use of IHL as an interpretative standard for the interpretation of the relevant IEL open-ended treaty obligation, such as the obligation to make a "wise use of wetlands in their territory" provided in the Ramsar Convention.[138] Such a process is not explained under the reconciliatory approach, however, and no interpretative tool is mentioned.[139]

The multi-layered approach

The multi-layered approach, which has been proposed by Dienelt (and which also considers the interactions of IHL and IEL with IHRL), starts from the observation that the "differences, parallels, and similarities" between IHL and IEL show "general compatibility" between these bodies of law.[140] Under this approach, a distinction must be made between the "clarifying function" of IEL with respect to IHL[141] and the "normative intensification" of IHL through IEL.[142] The first function is illustrated by the interpretation of the IHL concept of the "natural environment" in light of IEL,[143] and the second function by the concurrent application of the IHL and IEL regimes to the issue of protected sites and areas. Cases of conflicts of norms are discussed in relation to that second function.[144]

137 B. Sjöstedt, above note 7, pp. 206–207.
138 *Ibid.*, p. 207.
139 Moreover, this process intriguingly looks like an application of the *lex specialis* principle as is done by IHRL bodies when interpreting an applicable IHRL norm in light of IHL. Yet, this principle has been considered as inapplicable under the reconciliatory approach.
140 A. Dienelt, above note 7, p. 277.
141 *Ibid.*, pp. 14–15, 281, 293.
142 *Ibid.*, pp. 14–15, 281, 297.
143 *Ibid.*, pp. 282–297.
144 *Ibid.*, pp. 298–318.

The clarifying function is mainly based on a traditional mechanism, namely the principle of systemic integration.[145] By contrast, the normative intensification is operated in light of the "commonly shared objectives" across IHL and IEL, which arguably form together (also with IHRL) a "unifying *ordre public transnational*".[146] Under this approach, the "parallel prioritization of the environment" that can be inferred from the respective regulation of the protected sites and areas under the different regimes "represents the unifying *ordre public transnational*".[147] The proposal for this *ordre public* is built upon legal theories, elaborated by scholars[148] such as Anne Peters,[149] Alexander Proelβ[150] and Gunther Teubner,[151] that all "focus on shared objectives and unifying public interests".[152] Such a proposal purports to go beyond the formal mechanisms in the sense that such mechanisms, especially the principle of systemic integration, are considered as inappropriate.[153] The apparently claimed reason for excluding the application of the principle of systemic integration with respect to the normative intensification process is based on the view that the condition of the identity of the parties required by that principle would not be fulfilled. The argument put forward is that normative intensification concerns "[o]bligations requiring specific conduct", involving that "the state parties to the [applicable IHL and IEL] conventions in question" must be strictly identical. By contrast, the condition of the identity of the parties would not prevent the application of the principle of systemic integration in relation to the clarifying function. It is indeed claimed that this function concerns "[u]ndefined or unclear and ambiguous terminology of norms", the clarification of which would be possible in light of other treaties "irrespective of states parties", providing that "the treaties enjoy universal or quasi-universal membership and hence represent a common understanding of the term and [that] they address similar objects or the same situation".[154]

Yet, such reasoning is questionable. First, it is dubious that the condition of the identity of the parties required by the principle of systemic integration may vary depending upon whether the principle aims at interpreting an "unclear norm" or an "obligation requiring a specific conduct". Second, it might be difficult to make such a distinction, since certain unclear terms are key elements of obligations of conduct, such as the term "precaution" as part of the IHL-specific obligation of conduct to take precautions. More generally, it seems that the operation of the principle of systemic integration must be excluded with respect to the normative

145 *Ibid.*, pp. 15, 281, 293, 297.
146 *Ibid.*, pp. 15–16, 298, 312, 317.
147 *Ibid.*, p. 317; see also pp. 15–16.
148 *Ibid.*, pp. 314–316.
149 Anne Peters, "The Refinement of International Law: From Fragmentation to Regime Interaction and Politicization", *International Journal of Constitutional Law*, Vol. 15, No. 3, 2017.
150 Alexander Proelβ, *Internationales Umweltrecht*, De Gruyter, Berlin, 2017.
151 Gunther Teubner, *Constitutional Fragments: Societal Constitutionalism and Globalization*, Oxford University Press, Oxford, 2012.
152 A. Dienelt, above note 7, p. 316.
153 *Ibid.*, pp. 281, 293–294, 297, 314.
154 *Ibid.*, pp. 281, 294.

intensification process not because of a required stricter application of the condition of the identity of the parties for that process, but because such a process does not raise any issue of interpretation and involves instead conflicts of norms. It is clear, as emphasized above, that the principle of systemic interpretation is helpless in this respect. This is apparent in the case of co-application of IHL and IEL regulation on protected areas and sites, which is presented as an illustrative case of the normative intensification process and in relation to which conflicts between the relevant IHL and IEL norms are discussed.[155]

More fundamentally, by identifying the "parallel prioritization of the environment" as a shared objective between IHL and IEL (as well as IHRL) and as "represent[ing] the unifying *ordre public transnational*",[156] the multi-layered approach tends to give prevalence to IEL over IHL with respect to the protection of certain areas and sites. It considers those areas and sites as immune to any attack even if IHL permits causing damage to them. Yet, this overlooks a specific feature that is common to IHL and IEL in such cases, namely that they are intended to regulate conduct in armed conflict and not in times of peace. The claimed "unifying *ordre public transnational*", which notably gathers IHL and IEL together, ignores this common specific feature and the need, as detailed below, to counterbalance the prioritization of the environment, which is actually a shared peacetime objective, against considerations specific to armed conflict. Actually, the multi-layered approach has trouble entirely dispensing with such considerations. While claiming that the protected areas and sites remain immune to any attack, that view is immediately mitigated by conceding that this immunity remains "as long as a belligerent party does not *systematically* take advantage of the privileged protection of protected sites, zones and areas in order to achieve a military advantage".[157] That being said, under this view, the transformation of the area or site into a military objective is made dependent upon a stricter condition than that normally required under IHL and incidental damage does not seem to be permitted, although lawful under IHL to the extent that it is not excessive.

The coherency-based approach

Unlike the reconciliatory and multi-layered approaches, the proposed "coherency-based approach" goes beyond the formal mechanisms to the extent that their application must be guided by substantial considerations. The coherency-based approach is thus all-encompassing. It serves as a theoretical framework for both the interpretation process, by guiding the incorporation of IEL into IHL, and the application process, by guiding the resolution of conflicts of norms and interpretation, as well as the mere application of IEL in armed conflict alongside IHL even when no interplay arises between these bodies of law.

155 See *ibid.*, pp. 298–318.
156 See *ibid.*, p. 317; see also pp. 15–16.
157 *Ibid.*, p. 318 (emphasis added).

This alternative approach starts from the key idea that the interplay between IHL and other bodies of law (directly or indirectly) regulating armed conflicts, such as IEL, is a matter of coherence.[158] Although the reconciliatory approach also emphasizes the need for legal coherence,[159] the coherency-based approach provides this idea with a conceptual framework based on legal theories on normative coherence of legal systems,[160] as further enriched by reflections on legal pluralism.[161] As detailed elsewhere,[162] according to those theories, a legal system must not be merely consistent, which means that no conflict exists between its norms, but it must further be coherent, in the sense that its norms must make sense when taken together. Consistency of a legal system is achieved by resorting (if needed) to formal mechanisms of displacement or interpretation, such as the *lex specialis* principle and the principle of systemic integration, while coherency further requires that the ensuing legal solutions must be compatible with substantial considerations, driven by the foundational principle of that system.

It is argued that a common regulation specific to armed conflict may be envisaged as amounting to such a system. That regulation would stem from the combination of IHL with norms of other branches of international law that also (directly or indirectly) regulate conduct in armed conflict, including IEL. It should then be as coherent as any legal system, and its coherency should be ensured by its foundational principle that serves as guidance for the operation of the formal mechanisms. It is submitted that the foundational principle of a common regulation specific to armed conflict is composed of two prongs. The first prong stems from the clear will expressed by States in numerous general declarations to further protect the environment in armed conflict. This means that IEL must be fully incorporated into IHL, through the interpretation process, and fully applied in armed conflict, through the application process. However, since that common regulation is specific to armed conflict, the first prong must be counterbalanced by a second prong, which is based on what fundamentally distinguishes a peacetime from a wartime regulation, namely military necessity. Unlike the approach to a unifying *order public transnational*,

158 For the application of such an approach to IHL–IHRL interplay, see R. van Steenberghe, above note 74, pp. 1368–1396.

159 B. Sjöstedt, above note 7, pp. 189–191.

160 See e.g. Norberto Bobbio, *Teoria dell'Ordinamento Giuridico*, G. Giappichelli Ed., Torino, 1960, esp. pp. 69 ff.; Ronald Dworkin, *Law's Empire*, Fontana Press, London, 1986, esp. pp. 176 ff.; Neil MacCormick, "Coherence in Legal Justification", in Aleksander Peczenik, Lars Lindahl and Bert Van Roermund (eds), *Theory of Legal Science: Proceedings of the Conference on Legal Theory and Philosophy of Science, Lund, December 11–14, 1983*, D. Reidel Publishing Company, Dordrecht, London and Lancaster, 1984, pp. 235 ff.; Vittorio Villa, "Normative Coherence and Epistemological Presuppositions of Justification", in Patrick Nerhot (ed.), *Law, Interpretation and Reality*, Kluwer, Dordrecht, Boston, MA and London, 1990, pp. 430 ff.; Aldo Schiavello, "On 'Coherence' and 'Law': An Analysis of Different Models", *Ratio Juris*, Vol. 14, No. 2, 2001, pp. 233 ff.; Amalia Amaya, "Ten Theses on Coherence in Law", in Michael Araszkiewicz and Jaromir Savelka (eds), *Coherence: Insights from Philosophy, Jurisprudence and Artificial Intelligence*, Springer, Dordrecht, 2013, pp. 257–260.

161 See e.g. Mireille Delmas-Marty, *Ordering Pluralism: A Conceptual Framework for Understanding the Transnational Legal World*, Hart, Oxford and Portland, OR, 2009.

162 Regarding IHL–IHRL interplay, see R. van Steenberghe, above note 74, pp. 1365–1373; regarding IHL–IEL interplay, see R. van Steenberghe, above note 45, pp. 1150–1154.

the coherency-based approach therefore involves taking into account the realities of war in order to make efficient fighting possible and to avoid the common regulation being disregarded. Such effectiveness-based considerations may result either from concrete circumstances or from the structural features of armed conflicts.

As a result, the combination of the two prongs of the relevant "coherency test" for the determination of the regulation of armed conflict dictates that the outcomes of the full incorporation of IEL into IHL, through the interpretation process, or of the cumulative application of IHL and IEL, through the application process, must be adjusted, but only if, and to the extent that, they conflict with those effectiveness-based considerations. This might lead either to the modulation or to the displacement of the "inappropriate" regulation; however, in most cases (contrary to those relating to IHL–IHRL interplay),[163] this will not be needed. Under the interpretation process, the interpreted IHL norm, like the obligation of precaution, may consist in an obligation of means and can then easily be interpreted in light of IEL, as including, for example, the demanding IEL requirement of an environmental impact assessment. On the other hand, the interpretative IEL norm, such as the principle of sustainable use, may be expressed in a sufficiently flexible way to serve as an appropriate standard for the interpretation of the IHL rule on usufruct in situations of occupation. Under the application process, the applicable IEL norm, like the obligation to take measures "as far as appropriate" to protect biodiversity,[164] may have an open-ended nature, which allows it to accommodate the realities of war.

Modulations or displacements are needed only in certain cases, such as in cases of conflicts of norms or interpretation under the application process. It may be argued that, given the specific circumstances of the case,[165] the IHL regime is the *lex specialis* and must be given prevalence over the IEL one, such as in the case of the targeting by a State of an adversary that uses a site protected under the Ramsar Convention for military purposes. The obligation for that State to make "wise use" of such a site should then be interpreted in light of the IHL regime as not preventing that State from causing incidental damage to the site.

However, it must not be forgotten that, albeit distinct from the application process, the interpretation process might apply to the same conduct even though it impacts different norms. Indeed, such targeting must comply with other IHL norms, like the principles of proportionality and precaution. Those principles should be informed by IEL and great constraints then put on the targeting State with respect to the protection of the site. This would result in a combination of the

163 See e.g. R. van Steenberghe, above note 74, pp. 1333–1395.

164 See e.g. most substantial provisions of the Biodiversity Convention, above note 15.

165 The identification of the *lex specialis* should be determined on a case-by-case basis, in light of the above-mentioned substantial considerations. Regarding IHL–IHRL interplay, there is for example growing support for considering IHRL as constituting the *lex specialis* in certain cases of use of lethal force and as prevailing over the competing IHL framework: see e.g. David Kretzmer, Aviad Ben-Yehuda and Meirav Furth, "'Thou Shall Not Kill': The Use of Lethal Force in Non-International Armed Conflicts", *Israel Law Review*, Vol. 47, No. 2, 2014, pp. 191 ff.

application and interpretation processes in relation to the same conduct, which allows the taking into account of the realities of war while at the same time strengthening the protection of the environment.[166]

Conclusion

It is striking to observe a growing legal scholarship on the interplay between IHL and IEL. This is a fortunate evolution since it is well known that the environment needs further protection in armed conflict and that such protection could be achieved through IEL, which might fill the gaps left by IHL in that matter. The two main processes whereby IEL may play its gap-filling role are now well identified, namely in the interpretation of IHL in light of IEL and in the application of IEL alongside IHL. As they do not involve any modification of IHL, those processes have the advantage of accommodating States' view that IEL may be used to enhance the protection of the environment in warfare providing that IHL is not modified.[167] However, legal literature on the topic is confusing and lacks systematicity. The interpretation process is often confused with the interpretation of IHL in light of environmental considerations rather than IEL; moreover, it is not clearly distinguished from the application process. The effects of those processes and the conditions for their application are, however, fundamentally different. The interpretation process means the incorporation of an IEL norm into IHL and therefore implies that such a norm applies to conduct to which it would not necessarily apply according to its own scope of application. By contrast, the application process involves interplay between IEL and IHL norms only when the respective scopes of application of those norms overlap. Legal scholarship fails to delve, in that regard, into the geographical and personal scopes of application of IEL, especially its extraterritorial application and its application to armed groups. Finally, the different types of conflicts are not distinguished, namely conflicts of norms and conflicts of interpretation.

The legal mechanisms mentioned in relation to IHL–IEL interplay also lack in-depth study, which contrasts with the significant literature on such mechanisms with respect to IHL–IHRL interplay. It has been argued, in accordance with the few studies on the matter, that the principle of systemic integration is the best-suited mechanism with respect to the interpretation process. Since it mobilizes

166 Such combination of those processes is in fact already observable in IHRL case law. In the *Hassan* case, the ECtHR applied Article 5 of the ECHR but displaced its content in favour of the relevant IHL regime on detention (ECtHR, *Hassan*, above note 36). This follows the logic of the application process. However, by the same token, the Court used IHRL and, in particular, the ECHR to inform the IHL rule according to which detention must be subject to review by "a competent body". As a result of that interpretation process, the Court strengthened the protection of civilian internees by requiring notably that such a body must "provide sufficient guarantees of impartiality and fair procedure to protect against arbitrariness" (*ibid.*, para. 106).

167 See e.g. statements from the United Kingdom (UN Doc. A/C.6/71/SR.28, para. 25; UN Doc. A/C.6/73/SR.30, para. 9); the Netherlands (UN Doc. A/C.6/72/SR.26, para. 37); and Azerbaijan (UN Doc. A/C.6/73/SR.29, para. 114).

international law, rather than environmental considerations, to interpret IHL, the principle must nonetheless be applied cautiously and its application must respect specific conditions, such as the identity of the parties bound by the interpreted and interpretative norms. On the other hand, contrary to the few studies on the subject, it has been submitted that the *lex specialis* principle is best suited for solving conflicts arising under the application process, be they conflicts of norms or of interpretation.

Finally, only two comprehensive approaches have been proposed so far in legal literature in relation to IEL–IHL interplay (with one also including IHRL). They share one fundamental common feature, namely that the application of the formal mechanisms is excluded with respect to the co-application of IHL and IEL, whereas the principle of systemic integration is nonetheless considered as applicable with respect to the interpretation of IHL in light of IEL. This has led the two approaches to propose a solution going beyond those formal mechanisms in relation to the application process. One of them, the reconciliatory approach, draws its solution from the vagueness of IEL and the flexibility of the mandate of the IEL treaty bodies, which enables the finding of solutions adapted to armed conflicts and, more generally, to any concrete situation. The other one, the multi-layered approach, infers from the parallel shared objectives of IHL and IEL (as well as IHRL) a unifying *ordre public transnational*, which serves as guidance in case of conflicts of norms. A coherency-based approach has been proposed as an alternative, mainly built upon legal theories on normative coherence of legal systems and applying those theories to the claimed legal system formed by all of the norms of international law regulating armed conflict, such as those of IHL and IEL. This approach construes the system as being coherent in the sense given to that term by those theories. This involves going beyond the mere consistency of that system, mainly through the operation of formal mechanisms that enables the avoiding of any conflict between its norms, and achieving its coherency through the guiding role played by a foundational principle that takes into account the realities of war.

International Review of the Red Cross (2023), **105** (924), 1600–1622.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000279

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Gender, conflict and the environment: Surfacing connections in international humanitarian law

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Abstract

Both gender and the environment have traditionally been positioned at the periphery of international humanitarian law (IHL). In recent decades, there has been important progress in moving both concerns closer to its centre; to date, however, an understanding of the intersection of gender and the environment in the legal regulation of armed conflict remains largely underdeveloped. Nevertheless, as the present article documents, there are important similarities in strategies pursued to advance both gender and the environment from the periphery to the mainstream of IHL, namely: first, a focus on sources of IHL, in particular concretizing arguably limited specific treaty content with interpretive guidance and implementation

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frameworks; second, a conceptual critique of prevailing definitions of "harm" in IHL; and third, advancing, through close empirical documentation and household-level analysis of conflict's effects, understandings of harm that capture so-called "second-round" effects of conflict. Recognizing these important affinities between gender and environment work in IHL, this article draws on these insights to propose a typology of gendered environmental harm in conflict. The article concludes with proposals for enhancing the legal and operational capture under IHL of the gender–conflict–environment nexus.

Keywords: gender, environment, harm, armed conflict, nexus, international humanitarian law.

Introduction

Both gender and the environment have traditionally been positioned at the periphery of international humanitarian law (IHL). The Geneva Conventions are very limited on both gender and the environment, and the Additional Protocols make scant textual provision for them, limited to prohibitions against rape and non-discrimination based on sex,[1] and against "widespread, long-term and severe" damage to the natural environment.[2] Subsequent developments in the law, focused on interpretative and operational guidance, have however demonstrated important progress in IHL's treatment of both gender and the environment.

Informed by subsequent State practice, *opinio juris*, and treaty developments in other regimes of international law, Rules 43–45 of the International Committee of the Red Cross (ICRC) Customary Law Study note important expansions to the protection of the environment, in particular in its application to non-international armed conflicts.[3] The ICRC's 1994 and updated 2020 *Guidelines on the Protection of the Natural Environment in Armed Conflict* synthesize and document these legal developments for a broad audience of State and non-State parties to conflict.[4] Further, the International Law Commission's (ILC) 2022 Draft Principles on the Protection of the Environment in Relation to Armed Conflict, welcomed by the United Nations (UN) General Assembly, considerably enlarge this protection.[5] Likewise, the ICRC's 2004 operational

1 Art. 3 common to the four Geneva Conventions; Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I), Arts 75(1), 76(1).

2 AP I, Art. 55; Jean-Marie Henckaerts and Louse Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), Rules 50–52.

3 ICRC Customary Law Study, above note 2, Rules 43–45.

4 ICRC, *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*, Geneva, 1994; ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict*, Geneva, 2020 (2020 ICRC Guidelines).

5 UNGA Res. A/C.6/77/L.22, "Protection of the Environment in Relation to Armed Conflicts", 11 November 2022.

guidance on gender provided authoritative and influential interpretation of IHL for its gender-sensitive application, and the Committee's 2022 *Gendered Impacts of Armed Conflict* report formally supplemented this with a more systematic incorporation of gender inequality considerations as a key factor for the military to consider in their protection of civilian obligations.[6] Moreover, the recently updated Commentaries on Geneva Convention III represent a very considerable development in the gender-inclusive interpretation and application of IHL across multiple areas of that body of law.[7] In this context, the UN Security Council's Women, Peace and Security (WPS) agenda, established by Resolution 1325, has consistently linked gender inequality with sexual and gender-based violence in armed conflict and has highlighted the need to adopt a preventive approach through the full and equal participation of women.[8]

Despite the undoubted significance of these developments in the interpretation and application of IHL in recent decades, an understanding of the intersection of gender with the environment in the legal regulation of armed conflict remains roundly underdeveloped. Interpretive and operational guidance relating to the environment and IHL says little about gender, whilst similar instruments on gender say little about the environment. Reports from the field document the empirical relationship between the environment, gender, and security.[9] The core of this relationship is that environmental degradation results in gendered effects and harms that exacerbate in armed conflict.[10] Further, the international community is showing increasing concern for this gender–conflict–environment nexus as a security issue. The UN Security Council has identified environmental insecurity as a threat to humans,[11] while the Secretary-General's reports on WPS are clarifying these harms and noting ways forward. The Secretary-General's WPS reports acknowledge that environmental problems are a global threat which exacerbates complex emergencies and disproportionately

6 Charlotte Lindsey-Curtet, Florence Tercier Holst-Roness and Letitia Anderson, *Addressing the Needs of Women Affected by Armed Conflict*, ICRC, Geneva, March 2004; ICRC, *Gendered Impacts of Armed Conflict and Implications for the Application of International Humanitarian Law*, Geneva, June 2022.

7 See, generally, Catherine O'Rourke, "Geneva Convention III Commentary: What Significance for Women's Rights?", *Just Security*, 21 October 2020, available at: www.justsecurity.org/72958/geneva-convention-iii-commentary-what-significance-for-womens-rights/ (all internet references were accessed in July 2023); Heleen Hiemstra and Vanessa Murphy, "GCIII Commentary: I'm a Woman and a POW in a Pandemic. What Does the Third Geneva Convention Mean for Me?", *Humanitarian Law and Policy Blog*, 8 December 2020, available at: https://blogs.icrc.org/law-and-policy/2020/12/08/gciii-commentary-woman-pow-third-geneva-convention/.

8 UNSC Res. 1325, 31 October 2000.

9 DCAF, *Women Speak: The Lived Nexus between Climate, Gender and Security*, Geneva, 2022; Jessica M. Smith, Lauren Olosky and Jennifer G. Fernández, *The Climate-Gender-Conflict Nexus*, Georgetown Institute for Women, Peace and Security, 2021; UN Environment Programme (UNEP), UN Women, UN Development Programme and UN Department of Political and Peacebuilding Affairs, *Gender, Climate and Security: Sustaining Inclusive Peace on the Frontlines of Climate Change*, June 2020.

10 DCAF, above note 9; J. M. Smith, L. Olosky and J. G. Fernández, above note 9; UNEP *et al.*, above note 9.

11 UN Security Council, "Climate Change: Arria-Formula Meeting", 14 December 2017, available at: www.securitycouncilreport.org/whatsinblue/2017/12/climate-change-arria-formula-meeting.php; United Nations, "Climate Change 'Biggest Threat Modern Humans Have Ever Faced'", Press Release SC/14445, 23 February 2021, available at: https://press.un.org/en/2021/sc14445.doc.htm.

affects women and girls.[12] Further, in 2022, UN General Assembly Resolution 76/300 recognized the right to a clean, healthy and sustainable environment as a human right which is necessary to fulfil other existing rights, noting specifically the detrimental implications of climate change and environmental degradation for the rights of women and girls.[13] Importantly, this view from the UN Security Council and General Assembly matches the scientific approach of the Intergovernmental Panel on Climate Change (IPCC). IPCC reports expressly link climate change to increasing gender inequality and acknowledge that higher global warming levels "by increasing vulnerability will increasingly affect violent intrastate conflict".[14]

In a global context of increasing urgency to efforts to redress environmental degradation, decline in biodiversity and climate change,[15] and in which the central importance of gender equality to sustainable human development is widely recognized, this unexplored intersection in IHL is both noteworthy and problematic. This article therefore aims to begin to remedy the lack of attention paid to this gender–conflict–environment nexus and to present an agenda for a more comprehensive understanding of this relationship. Despite the underdeveloped understanding of the gender–conflict–environment nexus in IHL, this article identifies some very significant overlap in strategies used to move both gender and the environment away from the periphery and towards the centre. The article begins by documenting the first of these strategies – namely, a focus on sources of IHL and on bespoke interpretative and operational guidance, rather than targeting developments within the static domain of IHL treaty law. The article then turns to a shared critique from both gender and environment scholarship in IHL regarding the regime's overly narrow conception of "harm",[16] which has functioned to marginalize and diminish the significance of both gendered and environmental harm. Thirdly, the article turns to a further shared strategy of environment and gender work in IHL in order to revise and broaden conceptions of harm. This shared strategy is to focus on close empirical

12 UNSC Res. 2242, 13 October 2015, notes the "impacts of climate change" within the changing global context; UNSC Res. 2467, 23 April 2019, recognizes the link between sexual violence in conflict and post-conflict and "the illicit trade in natural resources including 'conflict minerals'". See, generally, *Women and Peace and Security: Report of the Secretary-General*, UN Doc. S/2019/800, 9 October 2019, para. 118, and UN Doc. S/2022/740, 5 October 2022, paras 64–69.

13 UNGA Res. 76/300, 28 July 2022.

14 IPCC, "Summary for Policymakers", in *Climate Change 2022: Impacts, Adaptation and Vulnerability*, Cambridge University Press, Cambridge and New York, 2022, pp. 15, 28–29.

15 Paris Agreement, UN Doc. FCCC/CP/2015/10/Add.1, 12 December 2015 (entered into force 4 November 2026); IPCC, *AR6 Synthesis Report: Climate Change 2023*, 2023.

16 The article focuses on the narrow conception of gender and environmental harm in armed conflict. While recognizing their importance, the article does not focus on two important strands of this strategy: (1) the interplay between IHL and international human rights law and between IHL and international environmental law, and (2) a deeper application of non-discrimination obligations for "gendering" the seemingly neutral provisions of IHL. See, for instance, Fionnuala D. Ní Aoláin, "The Gender of Occupation", *Yale Journal of International Law*, Vol. 45 No. 2, 2020; Catherine O'Rourke, *Women's Rights in Armed Conflict under International Law*, Cambridge University Press, Cambridge, 2020; Committee on the Elimination of Discrimination against Women, "General Recommendation No. 30 on Women in Conflict Prevention, Conflict and Post-Conflict Situations", UN Doc. CEDAW/C/GC/30, 1 November 2013 (General Recommendation 30); UNGA Res. A/C.6/77/L.22, above note 5.

documentation and household-level analysis of conflict's effects. These understandings of harm capture the longer-term, indirect, and so-called "second-round" effects of conflict. The article draws together insights from this empirical work to outline a tentative typology of gendered environmental harm in conflict. Finally, the article turns to proposing some legal and operational changes to IHL aimed at enhancing recognition and capture of the gender–conflict–environment nexus.

Coming in from the periphery (1): Clarifying sources of international humanitarian law

Sources of international humanitarian law and gender

IHL's sources have proven exclusionary to feminist and gender insights on two related fronts. First, the largely stagnant treaty development since 1977 has offered limited opportunity for feminist advocacy to influence the canon's foundational texts.[17] The treaties are themselves very limited on gender and were adopted before women's rights and gender equality received a robust treaty basis through the adoption of the UN Convention on the Elimination of All Forms of Discrimination Against Women. (CEDAW). Also, IHL's core treaties precede the UN Security Council's WPS agenda specifically linking gender and conflict. Second, the reliance on customary international law to progressively develop the canon further privileges State practice in international law-making, irrespective of the broad exclusion of women from leadership and decision-making in most States.[18] In the absence of specific treaty developments, IHL's advances on gender have instead relied on the dual strategies of, first, a focus on evolving operational guidance for addressing gender and, second, a reliance on interactions with treaty-based gender developments in cognate regimes of international law in order to advance more progressive interpretation of gender elements of IHL.

Ultimately, it is the most modest recuperative efforts, led by the ICRC, that have had the most practical significance. In the absence of potential new law-making, institutional efforts to improve the regime's gender sensitivity from States, civil society and international tribunals have driven the ICRC's focus on improved interpretation and operational implementation of existing law. These recuperative efforts have adopted a progressive interpretation of existing treaty-based and customary IHL obligations in order to include more direct articulation of women's experience of conflict. Parallel to the *ad hoc* tribunals in the 1990s

17 This typology and account is taken from C. O'Rourke, above note 16, in particular from the IHL sections of Chapter 2. See also Jeni Klugman, Robert U. Nagel, Mara Redlich Revkin and Orly Maya Stern, *Can the Women, Peace and Security Agenda and International Humanitarian Law Join Forces? Emerging Findings and Promising Directions*, Georgetown Institute for Women, Peace and Security, 2021.

18 Hilary Charlesworth, Christine Chinkin and Shelley Wright, "Feminist Approaches to International Law", *American Journal of International Law*, Vol. 85, No. 4, 1991.

framing acts of sexual violence as international crimes, including war crimes,[19] the ICRC's recognition of rape as a grave breach of the Geneva Conventions, as a matter of customary IHL,[20] is significant. Further, a focus on improved operationalization of existing legal commitments has been the site of some productive engagement.[21] Most notably, the 2001 study on *Women Facing War* made an assessment of the needs of women as civilians in armed conflict and as detainees and internees.[22] The study further outlined how the ICRC considered such needs to already be addressed by IHL, and the organization's operational response to those needs. This work by the ICRC was possible in a context increasingly cognizant of the reality of women and girls in conflict, reflected in documents such as the 1995 Beijing Declaration and Platform for Action and the UN Security Council's WPS regime of 2000.[23]

Also of important practical significance, given the organization's operational role, is the explicit shift in the ICRC's approach to gender and exclusion.[24] In 2004, the ICRC report *Addressing the Needs of Women Affected by Armed Conflict* declined to adopt gender equality policies within the ICRC's humanitarian programming because the Committee "is not mandated to engineer social change", this being considered a political act incompatible with the neutrality principle.[25] This position no longer applies – it is now considered "inconsistent with the reality of the ICRC's work as an actor engaged with the interpretation of international law … [and] fails to recognize the guarantee of equal rights between men and women, and prohibitions of discrimination, in international law".[26] More concretely, the ICRC's 2019 *Accountability to Affected People Institutional Framework* (AAP Framework) considers a gender diversity lens to inclusive programming in all operations "essential to maintain the principle of impartiality" (non-discrimination) by making an effort to understand specific needs.[27] The AAP Framework was recently supplemented by the ICRC

19 See, for example, International Criminal Tribunal for Rwanda (ICTR), *The Prosecutor v. Jean-Paul Akayesu*, Case No. ICTR-96-4-T, Judgment (Trial Chamber), 2 September 1998; ICTY, *The Prosecutor v. Miroslav Kvocˇka et al.*, Case No. IT-98-30/1-T, Judgment (Trial Chamber), 2 November 2001; ICTR, *The Prosecutor v. Alfred Musema*, Case No. ICTR-96-13-T, Judgment (Trial Chamber), 27 January 2000; ICTR, *The Prosecutor v. Sylvestre Gacumbitsi*, Case No. ICTR-2001-64-T, Judgment (Trial Chamber), 17 June 2004; ICTR, *The Prosecutor v. Mikaeli Muhimana*, Case No. ICTR-95-1B-T, Judgment (Trial Chamber), 28 April 2005.

20 To clarify the status of rape under IHL, the ICRC issued an aide-memoire in 1992 stating that the grave breach regime in Article 147 of Geneva Convention IV "obviously not only covers rape but also any other attack on a woman's dignity". ICRC, *Aide-Memoire*, 3 December 1992, para. 2.

21 C. Lindsey-Curtet, F. Tercier Holst-Roness and L. Anderson, above note 6.

22 Charlotte Lindsey, *Women Facing War: ICRC Study on the Impact of Armed Conflict on Women*, ICRC, Geneva, 2001.

23 Beijing Declaration and Platform for Action, Fourth World Conference on Women, 15 September 1995; "Security Council Resolutions on Women, Peace and Security", *United Nations Peacemaker*, available at: https://peacemaker.un.org/wps/normative-frameworks/un-security-council-resolutions; General Recommendation 30, above note 16.

24 ICRC, *Accountability to Affected People Institutional Framework*, Geneva, January 2019 (AAP Framework), pp. 4–5.

25 C. Lindsey-Curtet, F. Tercier Holst-Roness and L. Anderson, above note 6, pp. 6–7.

26 ICRC, above note 6, p. 36.

27 AAP Framework, above note 24, pp. 4–5.

Inclusive Programming Policy, which is more specific on gender.[28] The most significant and up-to-date operational guidance is the ICRC's 2022 *Gendered Impacts of Armed Conflict* report, which recognizes gender as a factor influencing civilian harm and attempts to assist States in planning their operations accordingly.[29]

Beyond this focus on operational guidance, an important area for updated and revised interpretation of IHL's treaty sources is the Commentaries on the Geneva Conventions. The original Commentaries, published in 1960, replicated the most egregious gender exclusions of the Conventions. By contrast, the updated 2020 Commentaries have demonstrated important progress along several axes, including eschewal of traditional assumptions of gender passivity, significantly enhanced proscriptions of gender-based and sexual harm, affirmation of the importance of women's participation in relevant decision-making, and broader maximization of interactions with cognate regimes in international law in order to advance an overall more gender-inclusive articulation of IHL.[30]

Gender in armed conflict has gained considerable public attention recently, most notably regarding sexual violence in armed conflict. From the limited statutory provisions of rape at the International Criminal Tribunal for the former Yugoslavia (ICTY), expanded by the International Criminal Tribunal for Rwanda (ICTR) and Special Court for Sierra Leone (SCSL), international jurisprudence has considerably developed gender-based crimes in armed conflict – for instance, recognizing that sexual and gender-based violence can amount to an act of torture, an outrage against personal dignity, an act of terrorism, and an act of genocide.[31] The Rome Statute has consolidated and expanded these gains; it regulates new gender-based harms such as gender-based persecution and forced pregnancy, provides a definition of gender, prohibits any form of discrimination on gender, and requires gender balance and gender expertise among staff.[32] Prompted by prosecutorial strategies, including various public policies that reaffirm gender as a social construction, judges of the International Criminal Court (ICC) have made big strides in addressing cases of rape and sexual slavery of girl soldiers, forced pregnancy, gender persecution, and the rape of men.[33] Further, States' military strategies have not ignored the reality of gender in armed conflict. The WPS

28 ICRC, *Inclusive Programming Policy*, Geneva, August 2022.

29 ICRC, above note 6.

30 See, generally, C. O'Rourke, above note 7.

31 ICTY, *The Prosecutor v. Anto Furundzija*, Case No. IT-95-17/1-T, Judgment (Trial Chamber), 10 December 1998; ICTR, *Akayesu*, above note 19; SCSL, *The Prosecutor v. Issa Hassan Sesay, Morris Kallon and Augustine Gbao*, Case No. SCSL-04-15-T, Judgment (Trial Chamber), 2 March 2009.

32 Rome Statute of the International Criminal Court, UN Doc. A/CONF. 183/9, 17 July 1998 (entered into force 1 July 2002), Arts 7(1)(g)(h), 7(3), 8(2)(b)(e), 21(3), 36(8), 42(9).

33 ICC, *The Prosecutor v. Bosco Ntaganda*, Case No. ICC-01/04-02/06, Judgment (Trial Chamber), 8 July 2019; ICC, *The Prosecutor v. Dominic Ongwen*, Case No. ICC-02/04-01/15, Judgment (Trial Chamber), 4 February 2021; ICC, *The Prosecutor v. Al Hassan Ag Abdoul Aziz Ag Mohamed Ag Mahmoud*, Case No. ICC-01/12-01/18, Amended Document Containing the Charges (Pre-Trial Chamber), 2 July 2019; ICC, *The Prosecutor v. Jean-Pierre Bemba Gombo*, Case No. ICC-01/05-01/08, Confirmation of Charges (Pre-Trial Chamber), 15 June 2009.

agenda has meant an impulse to foresee gender obligations in armed conflict in some military manuals and to adopt the full range of implementing legislation on conflict-related sexual violence.[34] Further, studies show that the adoption of CEDAW General Recommendation No. 30 on Women in Conflict Prevention, Conflict and Post-Conflict Scenarios has brought about increased State reporting on women's rights in conflict under States' human rights treaty obligations.[35]

Sources of international humanitarian law on the environment

The Geneva Conventions were codified before the radical shift in protection of the environment that occurred with the 1972 Stockholm Framework. Today, while some important soft-law instruments bridge some of the gaps between the environment and armed conflict,[36] major environmental treaties reflect little in the way of attempts to address the specific challenges of conflict. Nowhere in the 1995 Vienna Convention on the Protection of the Ozone Layer, the 1992 Climate Change Convention or the 1992 Convention on Biological Diversity is the aggravated environmental harm of armed conflict expressly addressed. Consequently, developments in the protection of the environment in armed conflict have relied primarily on developments in State practice and *opinio juris* in order to capture both in customary international law, and this process has not proceeded without contention.[37] In the context of IHL's relatively static nature, the strategies of gender advocates for the enhancement of IHL – namely, a focus on operational guidance and on productive interactions with cognate regimes – define also the most significant dynamics in progress under IHL towards enhanced protection of the environment in armed conflict.

In all writing on IHL and the environment, it is clear the extent to which the events of two conflicts – environmental damage in the Vietnam War and the burning of Kuwaiti oil wells by Iraq – have defined legal responses to environmental damage caused by armed conflict. Indeed, the limited express treaty-based environmental protections that do exist in IHL – namely, the Additional Protocol I (AP I) protections – can be attributed to widespread recognition of the immediate and longer-term environmental harm posed by the military tactics used in the Vietnam War. Further, whilst not specific to IHL, the Convention on the Prohibition of Military or Any Other Hostile Use of

34 Danish Ministry of Defence, *Military Manual on International Law Relevant to Danish Armed Forces in International Operations*, 2016, pp. 111, 207; UNSC Res. 2106, 24 June 2013, para. 2.

35 General Recommendation 30, above note 16; Catherine O'Rourke and Aisling Swaine, *Protecting Women's Rights in Conflict: New Developments and Next Steps in the Synergy between CEDAW and the WPS Agenda*, LSE Women, Peace and Security Working Paper Series 26/2020, 2020.

36 Declaration of the United Nations Conference on the Human Environment, 1972 (Stockholm Declaration), Principle 26; Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26 (Vol. I), 12 August 1992, Principle 24 (reaffirmed at Rio + 20); World Charter for Nature, UNGA Res. 37/7, 28 October 1982, para. 5; UNGA Res. 47/37, "Protection of the Environment in Times of Armed Conflict", 25 November 1992, Preamble.

37 For example, the customary law Rule 45 norm that AP I's protection of the environment applies also to non-international armed conflict has been contested as a norm of customary international law. ICRC Customary Law Study, above note 2, Rule 45.

Environmental Modification Techniques (ENMOD Convention) provisions constitute an attempt to prevent a repeat of the environmental damage caused by the use of Agent Orange in Vietnam. Much more radical legal reforms were also proposed as a result of the Gulf War, including proposals for a fifth Geneva Convention dedicated to protection of the environment.[38] By contrast, attempted legal responses to the setting ablaze of oil wells in Kuwait ultimately proved less impactful and less coherent. The Jordanians, in particular, sought to lead legal developments, both faulting the ENMOD Convention provisions and successfully leading the UN General Assembly to refer the matter of "Exploitation of the Environment as a Weapon of War" to the Sixth (Legal) Committee.[39] What these Committee discussions did reveal was that, while there was consensus that the Iraqi actions had been unlawful, States differed as to the legal basis for characterizing those actions as unlawful.[40] These diverse positions led the ICRC to advise the UN Secretary-General in a 1992 report that, whilst there was a consensus about "a number of gaps in the rules currently applicable", the best approach was not a new body of law. Rather, the ICRC recommended efforts to convince more States to, variously, accede to the existing instruments (AP I and the ENMOD Convention); enact implementing legislation at the national level; and observe their existing international obligations, grounded in Hague Convention IV, Geneva Convention IV, AP I, the ENMOD Convention, the Gas Protocol of 1925, the Biological Weapons Convention of 1972, the Conventional Weapons Convention and the draft Chemical Weapons Convention, and the customary international law principles of distinction and proportionality.

These developments culminated in the ICRC's 1994 *Guidelines on the Protection of the Environment in Armed Conflict*, which were essentially a restatement of the law of war provisions that the ICRC had cited in its report to the Secretary-General two years earlier. The 1994 Guidelines begin with the assertion that "existing international legal obligations and … state practice" make up their foundation. Thus, developments to enhance IHL's environmental protections have likewise eschewed treaty-based developments and have instead focused on operational guidance and restatements of customary IHL.

These proscriptions and protections have left uncertainty – or what Bothe *et al.* characterize as "gaps" – in three areas.[41] First, the AP I proscriptions in Articles 35 and 55 against "widespread, severe and long-term" damage to the natural environment are too restrictive, and their precise scope is

38 See, further, Michael N. Schmitt, "Green War: An Assessment of the Environmental Law of International Armed Conflict", *Yale Journal of International Law*, Vol. 2, No. 1, 1997, p. 23.

39 See, further, *ibid.* Also consider UNGA Res. 47/37, above note 36; and UNSC Res. 692, 20 May 1991, establishing a UN Compensation Fund for claims of environmental damage.

40 Several States regarded the Iraqi actions as contrary to the relevant UNSC Res. 687. The United States labelled the actions as wanton destruction and thus contrary to Geneva Convention IV; others emphasized how the action was contrary to customary principles of proportionality and necessity, whilst others referred to peacetime international environmental law.

41 Michael Bothe, Carl Bruch, Jordan Diamond and David Jensen, "International Law Protecting the Environment during Armed Conflict: Gaps and Opportunities", *International Review of the Red Cross*, Vol. 92, No. 879, 2010.

uncertain.[42] Second, some elements of the environment are too vulnerable and likely to become military objectives (as arguably, for example, in the Vietnam case), invalidating their protection as civilian objects. Third, a gap is created by the lack of clarity about practical issues of proportionality, where environmental damage is collateral to attacks against military objectives.[43] Together, these gaps point to practical challenges around assessing likely environmental damage, particularly in a context of evolving scientific and social understanding of the extent and implications of damage to the natural environment.

Further, it is worth noting that, by and large, developments in IHL to enhance the protection of the environment have not addressed the differential and disproportionate impacts of environmental damage on a population on the basis of the gender roles and norms within a society. Meanwhile, developments in IHL to bring greater express attention and understanding to matters of gender have engaged in quite circumscribed ways with the protection of the environment.

Coming in from the periphery (2): Reassessing definitions of harm in international humanitarian law

Gender and definitions of harm

Despite the overall positive trajectory in IHL's attention to women and gender, the definition of harm under IHL remains a key axis of gender critique. The concept of "harm" is central both to feminist legal work and to the gendered analysis of conflict. Eschewing legal categories of, *inter alia*, tort, crime and violations, the feminist focus on "harm" instead centres gendered experience. In the context of feminist legal work, lived experience of harm is typically contrasted with legal categories, with the ultimate aim of enhancing legal capture for such harm. In summary, IHL's involved definitions and categories of conflict struggle to encompass women's diverse gendered experiences of conflict harm. As for gender, whilst the Geneva Law treaties refer to the principle of equality and non-discrimination on the basis of sex, the term "gender" is mentioned neither in the 1949 Geneva Conventions nor in the 1977 Additional Protocols (created when gender provisions were absent in international law).[44] IHL's recognition of gendered experiences is limiting, especially regarding women and girls, whose protection only refers to sexual violence, pregnancy, motherhood and the provision of separate quarters and sanitary conveniences.[45]

42 The 2020 ICRC Guidelines provide substantive commentaries on the meaning of "widespread, long-term and severe", addressing Rule 2: see 2020 ICRC Guidelines, above note 4, paras 56–72.

43 Rule 7 of the 2020 ICRC Guidelines provides substantive commentary on the meaning of proportionality in attack. *Ibid.*, Rule 7.

44 Michelle Jarvis and Judith Gardam, "The Gendered Framework of International Humanitarian Law and the Development of International Criminal Law", in Indira Rosenthal, Valerie Oosterveld and Susana Sácouto (eds), *Gender and International Criminal Law*, Oxford University Press, Oxford, 2022, p. 52.

45 *Ibid.*, p. 53.

By contrast, feminist empirical work has drawn a number of noteworthy contrasts between legal categories of conflict and harm and women's experiences of conflict and harm. For example, much feminist scholarly work on conflict has focused on revealing connections and continuities between harm that occurs pre-conflict, during conflict and post-conflict, and between harm that occurs with a nexus to conflict and harm that occurs in the "private" sphere and thus outside of IHL regulation. A central focus of such work has been revealing continuities in sexual and gender-based violence and broader structural conditions of conflict.

An essential insight from empirical and household-level analysis of the gendered impacts of conflict has been to distinguish between so-called "first-round" and "second-round" conflict harms. Particularly influential in this area has been the World Bank-sponsored study by Buvinic *et al.* synthesizing the disparate evidence base in order to discern major headline findings in gendered experience of conflict that identify a wide set of differences between men and women and gender inequality as a crucial factor for adaptation.[46] Until recently, there has been relatively little rigorous work on the effects of conflict on individuals and households, including its effects on gender roles and inequalities, because large-scale, high-quality household surveys are generally not available for countries affected by violent conflict. Where these surveys are available, the foremost difficulty is the rigorous attribution of causality. It is virtually impossible to test causality, including in relation to gender inequalities, in conflict situations. In addition to these hurdles, there is a general lack of empirical information on gender variables at the individual and household levels, and logistical difficulties and risks involved in both conducting research and acting as a research subject in conflict and post-conflict situations.

These factors working against the documentation of gendered harm in conflict have resonance also for the documentation of environmental harm. Despite these limitations, recent research on the consequences of conflict has advanced and has benefited from more and better micro-level data, increased use of innovative approaches, and quasi-experimental variation. A growing number of longitudinal household-level data sets and follow-up household surveys in post-conflict settings that integrate pre-war data are facilitating new micro-studies on the impacts of war.[47] The more that studies by different researchers in different settings are able to observe regularities in the legacy of conflict on human development and gender inequality, the more confident we can be that the result is a valid assessment of conflict consequences rather than a spurious finding.[48]

The emerging empirical evidence is organized using a framework that identifies both the differential impacts of violent conflict on men and women

46 Mayra Buvinic, Monica Das Gupta, Ursula Casabonne and Philip Verwimp, "Violent Conflict and Gender Inequality: An Overview", *World Bank Research Observer*, Vol. 28, No. 1, 2013.

47 Christopher Blattman and Edward Miguel, "Civil War", *Journal of Economic Literature*, Vol. 48, No. 1, 2010.

48 M. Buvinic *et al.*, above note 46, p. 7.

(first-round impacts) and the role of gender inequality in framing adaptive responses to conflict (second-round impacts). First-round impacts of violent conflict include excess male mortality and morbidity as an obvious direct and indirect consequence of violent conflict, resulting in widowhood and incremented responsibilities for women to ensure livelihood, increasing their exposure to sexual and gender-based violence, asset and income loss, forced displacement, or migration. Thus, while it is clear that men predominantly experience reduced mortality and physical injury due to conflict, violent conflicts affect population health in ways that extend beyond the direct effects of violence through a combination of increased exposure to infectious disease, acute malnutrition, poor sanitation, and lack of health services. The evidence suggests that women and children have more exposure to these direct effects of war on health than men do.[49]

The Buvinic *et al.* study has contributed enormously to our understanding of the gendered distribution of conflict's effects. Conflict effects experienced disproportionately by women include poor nutrition and sanitation; vulnerability to poverty; longer-term health impacts of conflict, including disability and post-traumatic stress disorder; and migration and displacement, with attendant loss of assets and loss of income. Further, these first-round impacts often result in reductions in household income and consumption, triggering coping strategies that have gender implications,[50] leading in turn to second-round conflict effects. The second-round impacts of violent conflict on individuals and households are associated with responses that differ by gender, including adaptive responses by households to the violent shock. The demographic changes triggered by the sex-unbalanced mortality and morbidity of conflict alter or change marriage and fertility patterns and can create opportunities for political participation among those who have been formally excluded. The destruction of assets and the disruption of State and market institutions due to conflict require households to accommodate sudden sharp declines in household income and consumption. Households reallocate labour between the genders and reallocate resources assigned to children's well-being in order to cope with the aftermath of conflicts.

Overall, the literature review reveals the heterogeneity of impacts across contexts, conflicts and countries for girls and boys, women and men. Although many households rebound from the shock inflicted by conflict, women left alone to provide for their families may be particularly vulnerable to poverty that can persist across generations. The available evidence also highlights the many gaps in knowledge about the gender-differentiated effects of and adaptive responses to conflict.

49 Hazem A. Ghobarah, Paul Huth and Bruce Russett, "Civil Wars Kill and Maim People – Long After the Shooting Stops", *American Political Science Review*, Vol. 97, No. 2, 2003.

50 M. Buvinic *et al.*, above note 46, p. 8.

The environment and definitions of harm

Within IHL, and indeed international law more broadly, there remains a core tension around the rationale for the protection of the environment and attendant definitions of harm to the environment. The traditional dichotomy in such discussions is – as Michael Schmitt helpfully outlines – between the "utilitarian" approach, which values the environment for what it offers humankind, primarily food, shelter, fuel and clothing;[51] and the "intrinsic value" approach, which considers value that is independent of the uses for which humans may exploit the environment. This latter approach is not used instead of utilitarian value, but rather in addition to utilitarian value. Intrinsic value is inherently more difficult to measure, as the point of departure is not the human self. Nevertheless, connections between intrinsic and utilitarian value could be approached through, for example, considering the broader significance of ecosystem function and species regeneration capacity.[52] Interestingly, writing in 1997, Schmitt attributes this utilitarian view both to the ICRC, on the grounds of its concerns that an intrinsic value perspective might displace focus from the protection of humans, and to warfighters, who "tend to be concerned that [the intrinsic value approach] may distort proportionality calculations and thereby immunize valid military objectives".[53] Although IHL has held a largely anthropocentric view on protecting the environment to the extent that it is relied upon by civilians, the negotiations of the Additional Protocols revealed two positions among ICRC delegates that were reflected in the resulting provisions: Article 55 is clearly anthropocentric, while Article 35(5) protects the environment as such, reflecting an intrinsic approach.[54]

One provocative idea is that, by emphasizing the gendered effects of environmental harm in conflict, gender advocates in fact reinforce and retrench an anthropocentric and utilitarian approach to the environment. By emphasizing distinctions in impact between men and women, boys and girls, gender advocates once again conceive the environment as being of value only for its immediate human benefit and without intrinsic worth. An alternative view is to say that, as the empirical evidence indicates that both women and the environment are more vulnerable to the longer-term and indirect effects of war, a gendered analysis of environmental harm is in fact essential to understanding the intrinsic value of the environment and the full effects of conflict on the environment.

The dominance of anthropocentrism in international law's concern with the environment has been critiqued not only in respect of IHL, but with regard to international law more broadly. For example, Alan Boyle is trenchant in his critique of the submission of the Office of the UN High Commissioner for

51 M. N. Schmitt, above note 38, p. 6.
52 *Ibid.*
53 *Ibid.*, p. 7.
54 2020 ICRC Guidelines, above note 4, paras 18–21.

Human Rights to the Paris Agreement negotiations.[55] Boyle describes the submission as "conceptually imperialist" and "myopic" because it focuses only on the harmful impact of climate change on the rights of humans, rather than on the environment as such.[56] As Boyle notes, this anthropocentric and utilitarian approach is precisely the one opposed by ecologists and ecological theorists, because it fails to understand and appreciate the ecological reality and biological diversity. Boyle writes:

> By looking at the problem in moral isolation from other species and the natural world, we simply reinforce the assumption that the environment and its natural resources exist only for immediate human benefit and have no intrinsic worth in themselves. But … we cannot afford to ignore the fundamental value of natural capital – the climate, biodiversity, ecosystems, the marine environment and so on – in sustaining life on earth.[57]

Contemporary work on climate change, most notably the periodic reports of the IPCC, has arguably functioned to render this human/environment distinction obsolete, or at least anachronistic. The growing and deepening evidence base provided by the IPCC is unequivocal about "the interdependence of climate, ecosystems and biodiversity, and human societies".[58] The evidence base yielded and analyzed through the IPCC reports is compelling in revealing the interdependent nature of harm to the environment and harm to human and social life. Thus, interestingly, there is a shared dynamic in interventions by environmentalists and gender advocates into the conception and definition of environmental harm in armed conflict, namely the investigation of, empirical documentation of and emphasis on "the indirect effects of war on human populations, mediated through its destruction of biological habitat".[59] Interested also in the household-level effects of conflict, and drawing on extant population-based public health data, this work yields a clearer picture of the full scale of harm resulting from destruction of the environment in armed conflict.[60] For example, Leaning's analysis focuses on four military activities that can be seen as having prolonged and pervasive environmental impact with grave attendant consequences for human populations, namely the production and testing of nuclear weapons; aerial and naval bombardment of terrain; dispersal and persistence of landmines and buried ordnance; and deliberate and collateral effects of environmental destruction and contamination, through the use or storage of military despoliants, toxins, and waste. In line with the gender research

55 Alan Boyle, "Climate Change, the Paris Agreement and Human Rights", *International and Comparative Law Quarterly*, Vol. 67, No. 4, 2018.
56 *Ibid.*
57 *Ibid.*
58 IPCC, above note 15, p. 5.
59 Jennifer Leaning, "Tracking the Four Horsemen: The Public Health Approach to the Impact of War and War-Induced Environmental Destruction in the Twentieth Century", in Jay E. Austin and Carl E. Bruch (eds), *The Environmental Consequences of War*, Cambridge University Press, Cambridge, 2000.
60 Alastair W. M. Hay, "Defoliants: The Long-Term Health Implications", in J. E. Austin and C. E. Bruch (eds), above note 59.

surveyed, such work is candid in setting out the methodological challenges and limitations of conducting such research in conflict-affected settings, but highly useful in ascertaining the immediate and longer-term direct and indirect effects of environmental destruction.[61]

Gender, conflict and the environment: Improving the understanding of harm

As noted previously, much of the literature addressing IHL and the environment references two defining conflicts and conflict methods in underpinning subsequent development of the law: first, deliberate destruction by US forces – including the use of Agent Orange – of the natural environment which was being used to military advantage by Communist forces to conceal their movements and logistics and provide them with sustenance during the Vietnam War (1959–75); and second, the deliberate setting ablaze of Kuwaiti oil wells by Iraqi forces in the Gulf War (1990–91). More recent empirical and legal studies primarily address two further forms of environmental harm: the destruction and exploitation of natural resources,[62] and military actions which exacerbate climate change.[63] While not claiming to be an exhaustive list, these key lines of documented environmental harm in conflict are useful for the organization of this section.

From the extant literature, it is possible to discern the following key lines of environmental destruction due to military activities in conflict:

1. the polluting effects of certain weapons;
2. pollution released in attacks on chemical, pharmaceutical and oil facilities;
3. the destruction and exploitation of natural resources; and
4. military actions exacerbating the onset or impacts of climate change.

This draws on extant documentation of environmental harm and gender harm resulting from conflict to provide an initial mapping of the gender–conflict–environment nexus.

The polluting effects of certain weapons

Certain weapons can have a serious impact on the environment which in turn threatens the means of survival, health and livelihood of the civilian population. Given the importance of the natural environment to the survival of humans, including their ability to produce and consume food, IHL requires that care be taken in warfare to protect the natural environment against widespread, long-term

61 See, for example, J. Leaning, above note 59, p. 391.
62 See, for example, Phoebe Okowa, *Protection of Natural Resources in Armed Conflict*, United Nations Audiovisual Library of International Law, 2020.
63 Stuart Parkinson and Linsey Cottrell, *Estimating the Military's Global Greenhouse Gas Emissions*, Scientists for Global Responsibility and Conflict and Environment Observatory, November 2022.

and severe damage. This duty of care includes a prohibition on the use of means and methods of warfare intended or expected to cause such damage to the natural environment and thereby prejudice the health or survival of the population. The prohibition on starvation of the civilian population as a method of warfare and the destruction of objects indispensable to the latter's survival expressly includes "agricultural areas for the production of foodstuffs, crops, livestock … and irrigation works" as examples of such protected objects. Critically, protecting the environment requires the application of the basic rules on distinction, precaution and proportionality in order to minimize harm to civilians and civilian objects, including the environment.[64] Furthermore, the rules prohibiting means and methods of warfare which cause widespread, long-term and severe damage to the environment are also relevant, as such damage may make farming impossible. In addition to these general prohibitions, a number of instruments prohibit the use of specific weapons, such as chemical weapons, that may cause long-term damage to the environment.[65]

Drawing on Buvinic *et al.*'s documentation of the household-level effects of conflict, we can readily identify the gendered effects of reduced ability to produce and consume food.[66] Women and girls are more exposed to the indirect effects of harm to agriculture and food production, most notably acute malnutrition. This is partially due to nutrition bias, which means that households typically favour men and boys over women and girls for the allocation of scarce nutrition.[67] Further, women's lower body mass makes them more vulnerable to the harmful effects of the pollution caused by weapons.

Consider, for example, the evidence base that has emerged concerning the longer-term adverse effects of the use of Agent Orange, the military herbicide containing the hazardous chemical compound dioxin that was widely disseminated in South Vietnam during the Vietnam War. Studies of the impact of Agent Orange on women's reproductive health echoed economics studies reporting that women and children are more vulnerable to the indirect effects of the aftermath of war.[68] In addition to polluting the environment and causing cancers and other diseases in those directly exposed to it, dioxin has caused high rates of pregnancy loss, congenital birth defects and other health problems in children.[69] Women exposed to Agent Orange had a high number of miscarriages and premature births, and about two thirds of their children had congenital malformations or developed disabilities within the first years of life. Most of the families were poor, aggravated by impaired health in the men, the burden of caring for disabled children, and feelings of guilt and inferiority.[70] Studies based on data from US military archives on the herbicide operations estimate the

64 UNGA Res. A/C.6/77/L.22, above note 5, Principle 14; 2020 ICRC Guidelines, above note 4, Rules 5–10.
65 See, generally, 2020 ICRC Guidelines, above note 4, Rules 19–25.
66 M. Buvinic *et al.*, above note 46, p. 117.
67 *Ibid.*, pp. 119, 133.
68 Le Thi Nham Tuyet and Annika Johansson, "Impact of Chemical Warfare with Agent Orange on Women's Reproductive Lives in Vietnam: A Pilot Study", *Reproductive Health Matters*, Vol. 9, No. 18, 2001.
69 *Ibid.*
70 *Ibid.*

prevalence of disabilities among Vietnamese people using the 2009 Population Census. The results demonstrate that the legacy of Agent Orange continues, with ongoing adverse (although small) effects on health even more than fifty years since the end of the war. Critically, the health burden of severe mobility disability has been mostly borne by ethnic minority women in the affected areas.[71] The impact of certain polluting weapons, such as Agent Orange, is thus clearly gendered.

Pollution released in attacks on chemical, pharmaceutical and oil facilities

The paradigmatic example of this sort of environmental harm is the deliberate setting on fire of Kuwaiti oil wells in the Gulf War. Saddam Hussein's last order was to set all of Kuwait's oil wells on fire; in this massive act of retribution, over 700 oil wells burned for ten months, and it took over 20,000 firefighters to extinguish all of the fires. The oil fires represent the largest uncontrolled, continuous release of burning petrochemicals in history, with the total fine particulate matter emissions estimated at 3 billion kilograms. The fires had immediate devastating environmental consequences, including substantial damage to the ecosystem and to groundwater. The effects were manifold and diverse and included adverse effects on agriculture and food production.[72] As noted previously, the prohibition on starvation of the civilian population as a method of warfare and the destruction of objects indispensable to the latter's survival expressly includes "agricultural areas for the production of foodstuffs, crops, livestock … and irrigation works" as examples of such protected objects.

The utilitarian gendered effects noted above apply here also, in that women's environmental exposure makes them more vulnerable to lifetime reproductive health risks and disease. Arnetz *et al.*'s randomized study on families affected by the 1991 Gulf War reveals the impact of exposure to sixteen environmental chemicals, including smoke from oil fires, depleted uranium, nerve gas, mustard gas, and contaminated food, drink and bathing water.[73] The study concludes that exposure to chemicals increased the risk of adverse birth outcomes such as congenital anomalies, stillbirth and low birth weight by two to four times.[74] Longer-term effects included the emergence of respiratory diseases attributable to the conflict, and a marked increase in breast cancer due to the combined effect of chronic stress accumulation and carcinogenesis. According to a study by Cange, there was also a marked increase in breast cancer incidence rates around 1997 (i.e., the end of the latency period).[75]

71 Nobuaki Yamashita and Trong-Anh.Trinh, "Long-Term Effects of Vietnam War: Agent Orange and the Health of Vietnamese People after 30 Years", *Asian Economic Journal*, Vol. 36, No. 2, 2022.

72 Samira A. S. Omar, Ernest Briskey, Raafat Misak and Adel A. S. O. Asem, "The Gulf War Impact on the Terrestrial Environment of Kuwait: An Overview", in J. E. Austin and C. E. Bruch (eds), above note 59.

73 Bengt Arnetz, Alexis Drutchas, Robert Sokol, Michael Kruger and Hikmet Jamil, "1991 Gulf War Exposures and Adverse Birth Outcomes", *US Army Medical Department Journal*, April–June 2013.

74 *Ibid.*

75 Charles W. Cange, "The Life Course Model as a Framework for Post-Conflict Health Analysis: Reflections on the Gulf War Critical Period", *Medicine, Conflict and Survival*, Vol. 32, No. 4, 2016. Breast cancer is one

The destruction and exploitation of natural resources

The AP I and Additional Protocol II provisions on the protection of natural resources have been described as "rudimentary".[76] The experience of armed conflict in Angola, Sierra Leone, Liberia and across the Great Lakes Region reveals the centrality of the exploitation of natural resources in causing, sustaining and exacerbating these conflicts. Further, recent research suggests that at least 40% of all intra-State conflicts over the last sixty years have had a link to natural resources.[77] In turn, these conflicts evidence how armed conflict involves the damaging, degradation and destruction of natural resources that sustain livelihoods and communities. Also of relevance is the prohibition on the destruction of real or personal property, although this prohibition is not absolute, and destruction can be justified if rendered absolutely necessary by military operations. Protection is also afforded by the prohibition on pillage – i.e., the taking of property belonging to private individuals. While the prohibition on destruction relates to the land itself and any crops still growing, the prohibition on pillage relates to crops that have already been harvested and to livestock, and could be applied to the looting of natural resources.

Recent empirical literature has begun to measure the substantial costs of violent conflict on economies and communities, including the economic and household-level effects of the destruction of natural resources. These costs encompass the most immediate and observable consequences of war, such as damage to the national productive structure and the redirection of resources from productive to military uses, as well as more indirect effects on households' assets and income and other attributes of economic well-being. As Buvinic *et al.* note, "[g]ender roles and inequality are clearly important in terms of how individuals and households experience the loss of assets and income during conflict and how they accommodate these losses".[78] These factors help to explain the interaction between violent conflict and poverty and the channels through which violent conflict can perpetuate household poverty, which in turn lead to what Buvinic *et al.* identified as the second-round impacts of conflict. The destruction of assets such as natural resources and the disruption of State and market institutions due to conflict require households to accommodate sudden sharp declines in household income and consumption. Households reallocate labour between the genders and reallocate resources assigned to children's well-being to cope with the aftermath of conflict, and evidence indicates that child stunting may be the most persistent negative economic effect of violent conflict. Faced with sudden income loss and loss of assets, poor households tend to choose to protect their

particular condition that shows a link between chronic stress accumulation and carcinogenesis. A focus on breast cancer underscores the impact of stress on hormonally sensitive areas of the body.

76 P. Okowa, above note 62.

77 UNEP, *From Conflict to Peacebuilding: The Role of Natural Resources and the Environment*, Nairobi, 2009, p. 8.

78 M. Buvinic *et al.*, above note 46.

sons – this conflict finding corresponds with economic shock data from fifty-nine developing countries, which found that infant mortality rises with negative economic shocks and that female infants' survival is especially sensitive to such shocks.[79] Accordingly, as armed conflict exacerbates the economic deprivation of households reliant on natural resources, this has a negative impact on child health, especially the survival of infant girls.

Military actions exacerbating the onset or impacts of climate change

Deforestation and the release of greenhouse gases constitute two consequences of military actions which exacerbate the onset of climate change. Military operations may directly result in large-scale deforestation, as in Syria, impacting civilian livelihood and environmental and climate resilience.[80] Further, a key way in which conflict exacerbates environmental degradation is through prolonged displacement, which substantially impacts already fragile ecosystems and is destructive for biodiversity. For example, settlement of refugees in Virunga National Park, in the Democratic Republic of the Congo, had a devastating impact in terms of deforestation and loss of biodiversity.[81]

The consequences of reduced access to firewood and water caused by the exacerbation of climate change have direct effects for women. Access to adequate water (in terms of both quality and quantity) for cooking, drinking and washing purposes is a necessity for preserving the health of a population. Furthermore, in rural areas, water is essential for irrigation purposes. As the cases of Mali and Yemen show, women are often hardest and earliest hit by the environmental degradation and water scarcity occasioned by armed conflict, as they often bear the responsibility of providing water and carrying out tasks for which water is necessary, such as cooking, cleaning and washing.[82] In wartime, they have to walk greater distances and wait for longer periods of time to meet household needs.[83] Likewise, women typically bear responsibility for the gathering of firewood needed for cooking. Deforestation results in women and their children having to walk further to collect firewood,[84] exposing them to higher rates of sexual and gender-based violence.[85]

Interestingly, where we have seen specific research on the gender–conflict–environment nexus is on the topic of climate change. In recent years, a range of significant studies on the gender–conflict–climate change nexus have emerged

79 Sarah Baird, Jed Friedman and Norbert Schady, "Aggregate Income Shocks and Infant Mortality in the Developing World", *Review of Economics and Statistics*, Vol. 93, No. 3, 2011.

80 Tara Najim, Wim Zwijnenburg, Noor Nahas and Roberto Jaramillo Vasquez, *Axed and Burned: How Conflict-Caused Deforestation Impacts Environmental, Socio-economic and Climate Resilience in Syria*, PAX, March 2023.

81 P. Okowa, above note 62.

82 DCAF, above note 9, pp. 29, 37.

83 C. Lindsey-Curtet, F. Tercier Holst-Roness and L. Anderson, above note 6, p. 57.

84 *Ibid.*, p. 55.

85 *Ibid.*, p. 55.

from the legal, policy and academic domains.[86] By and large, these studies have focused primarily on how climate change is itself a catalyzing and exacerbating factor in conflict – for example, how water scarcity can lead to armed conflict over control of or access to major water sources and how such conflicts in turn have disproportionate gender effects. These studies have not, however, focused on how the military means and methods which exacerbate climate change have gendered effects. While they are important for further understanding of the full scale and cost of climate change, these studies are less immediately usable for IHL, for example, in assessing what constitutes "impermissible environmental damage" or, conversely, proportionate environmental harm. Further, the enhanced evidence base on the gender–conflict–climate change nexus is welcome and very valuable; framing this evidence more broadly as harm to the environment would present it as being more readily applicable to IHL obligations and rules.

Gender, conflict and the environment: Enhancing legal and operational capture

This article argues that IHL would benefit from integrating a gender analysis of the environment in order to better inform its operational principles and, as a result, enhance the protection of both civilians and the natural environment. Accordingly, the article seeks to open a discussion on the convenience of adopting a gender analysis to address environmental issues in armed conflict. We conclude by illustrating this claim with regard to the ICRC's two key reports of 2020 on the topic: *When Rain Turns to Dust* (focused on the protection of civilians) and the updated *Guidelines on the Protection of the Natural Environment in Armed Conflict* (focused on the conduct of hostilities). It is now up to States to adopt such a practice in the conduct of their military operations.

The ICRC report *When Rain Turns to Dust* foregrounds the need to protect the population from the compounded effects of environmental harm and warfare.[87] Acknowledging the information gaps relevant to attaining this goal, the report urges States to develop context-specific analyses of the "humanitarian consequences of

86 See, for example, Keina Yoshida *et al.*, "Defending the Future: Gender, Conflict and Environmental Peace", LSE Centre for WPS, Gender Action for Peace and Security UK and Women's International Peace Centre, 2021; Lonenzo Angelini and Margot Jones, *Climate Change, Gender Equality and Peacebuilding: The Value of Gender-Sensitive and Climate-Sensitive Conflict Analysis*, European Peacebuilding Liaison Office, Civil Society Dialogue Network Discussion Paper No. 18, 2022; UNEP et al., above note 9; Kvinna till Kvinna Foundation, *Position Paper: The Climate, Gender and Conflict Nexus*, 2022, available at: https://kvinnatillkvinna.org/publications/position-paper-climate-gender-and-conflict-2022/; Rowena Maguire, "Gender, Climate Change and the United Nations Framework Convention on Climate Change", in Kate Ogg and Susan H. Rimmer (eds), *Research Handbook on Feminist Engagement with International Law*, Edward Elgar, Cheltenham, 2019; Christiane Fröhlich and Giovanna Gioli, "Gender, Conflict, and Global Environmental Change", *Peace Review: A Journal of Social Justice*, Vol. 27, No. 2, 2005.

87 ICRC, *When Rain Turns to Dust: Understanding and Responding to the Combined Impact of Armed Conflicts and the Climate and Environment Crisis on People's Lives*, Geneva, July 2020.

conflicts and climate risks occurring in tandem and to deepen understanding of how these consequences may vary according to people's individual characteristics, including their gender, age, capacity or occupation", in order to address people's needs and vulnerabilities.[88] This operational gap can be addressed while considering the way in which gender and other identities intersect with the environment, compounding the differentiated experiences of women, girls, men and boys in armed conflict. Indeed, this approach is already aligned with the ICRC's position: the organization's 2019 AAP Framework and complementary 2022 Inclusive Programming Policy urge actors to consider gender and other factors compounding discrimination while implementing inclusive programming that relies on the participation of affected people.[89] By stressing consideration of all "diversity factors" affecting exclusion, the AAP Framework creates ample room to include policies that tackle the way gender and other identities intersect with the environment, thus addressing these specific harms in armed conflict.[90]

The ICRC's *Guidelines on the Protection of the Natural Environment in Armed Conflict* are underpinned by the aim of due regard to the environment in deciding the means and methods of warfare.[91] In practice, this requires the parties to the conflict to take all feasible precautions to minimize incidental harm at all times, even in the absence of scientific evidence on the environmental impact of an attack.[92] During targeting, this general obligation imposes a duty of proportionality that prohibits launching attacks which may be expected to cause excessive harm in relation to the concrete and direct military advantage anticipated.[93] Accordingly, the proportionality test requires the parties to the conflict to assess (1) the foreseeable environmental harm and (2) whether that harm would be excessive in relation to the military advantage. In so doing, "it is particularly important that account is taken of the attack's indirect effects (also referred to as 'reverberating', 'knock-on' [or] 'cascading' … effects) on the civilian population and civilian objects that are reasonably foreseeable".[94] There already exists, therefore, a basis for IHL's environmental risk assessment in attack to include the immediate and derivative effects not only on the natural environment but also on persons and property.[95]

Assessing the reasonably foreseeable extent (and thus the excessiveness) of environmental harm is, at the present stage of scientific knowledge, a particularly difficult task – hence the importance of the precautionary principle of avoiding or minimizing incidental damage to the environment, even in the absence of certainty as to the effects of a given military operation.[96] One reason for this

88 *Ibid.*, p. 43.
89 AAP Framework, above note 24, p. 6; ICRC, above note 28, p. 4.
90 AAP Framework, above note 24, p. 3.
91 2020 ICRC Guidelines, above note 4, Rule 1.
92 *Ibid.*, para. 44.
93 *Ibid.*, Rule 7.
94 *Ibid.*, para. 117.
95 ILC, *Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities*, UN Doc. A/RES/56/82, 12 December 2001, commentary to Art. 7.
96 ICRC Customary Law Study, above note 2, Rule 44.

difficulty is that environmental harm is more complex to quantify than other harms due to the uncertainty of assessing its effects, including its long-term effects.[97] Another reason is that the calculus of human harm is inaccurate largely due to IHL's traditional lack of interest in the way gender discrimination intersects with other identities and situations (including the environment) when determining the differentiated effects of targeting on women, men, girls and boys.[98] This inaccuracy might increase in future with the use of autonomous weapons systems, where the digital bodies targeted "lack" a gender and where human agency is entangled with data-driven judgments that dilute ethical responsibility.[99]

Integrating a gender perspective into IHL's environmental risk assessment can enhance understanding of the foreseeable harm during targeting that is necessary to assess excessive harm. A gender lens provides critical information on the human component of environmental harm, explaining how women, men, girls and boys are differently affected by the environment and, conversely, how these gender relationships affect the environment.[100] Accordingly, it is suggested that States integrate a gender analysis of environmental harm at two stages: (1) *ex ante*, when assessing the reasonably foreseeable damage to the environment as part of their IHL obligations of proportionality and precautions, and (2) *ex post*, to fulfil their protection obligations. To this end, when assessing environmental harm at these stages, States' military manuals and practice may consider asking the following questions: how is the environment "intrinsically" affected? And, additionally, how does the gender-differentiated impact on women, girls, men and boys compound and shape the nature of environmental harm? States would accordingly be proactive in adopting a concrete and responsible measure of due diligence that satisfies the foreseeability test for assessing excessive harm in military operations. Further, States would fill a serious information gap, gathering more reliable information on the diversity of human – gendered – needs in order to better protect the civilian population from the effects of environmental harm in armed conflict.[101]

Conclusion

Gender and the environment no longer occupy the periphery of IHL; today, both matters represent the cutting edge of that body of law. If IHL is to remain relevant and practically applicable to a world seized by environmental degradation and gender inequality, an enhanced understanding of the gender–

97 Emanuela-Chiara Gillard, *Proportionality in the Conduct of Hostilities: The Incidental Harm Side of the Assessment*, Chatman House Research Paper, December 2018, para. 139.
98 M. Jarvis and J. Gardam, above note 44, p. 64.
99 Matilda Arvidsson, "Targeting, Gender, and International Posthumanitarian Law and Practice: Framing the Question of the Human in International Humanitarian Law", *Australian Feminist Law Journal*, Vol. 44, No. 1, 2018, pp. 20, 23, 27.
100 Jody Prescott, "Climate Change, Gender and Rethinking Military Operations", *Vermont Journal of Environmental Law*, Vol. 15, No. 4, 2014.
101 *Ibid.*

conflict–environment nexus, and the application of IHL to that nexus, is essential. This article has focused on the clear affinities and shared strategies used to date – with some success – to advance both matters towards the mainstream of IHL. The lack of data necessary to fully understand the gender–conflict–environment nexus is problematic, though we argue that this data gap may be less severe than it originally appears. As we have outlined, existing documentation of the immediate, long-term, direct and indirect effects of conflict is available for both gender harm and environmental harm. A commitment to connecting and deepening these data points in order to inform the application of IHL rules is a project that we have sought to tentatively advance here.

International Review of the Red Cross (2023), **105** (924), 1623–1645.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000310

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At the frontlines of implementing the right to a healthy environment: Understanding human rights and environmental due diligence in relation to armed conflicts

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Abstract

Potential harm to human rights and the environment, including by corporate actors, is amplified in situations of conflict. This article focuses on applying the right to a healthy environment in relation to armed conflicts and corporate responsibility. In particular, it analyzes and compares due diligence requirements in the European Union Conflict Minerals Regulation and the International Law Commission's Draft Principles on Protection of the Environment in Relation to Armed Conflicts and examines how these align with the right to a healthy environment.

* The author is grateful for the insightful comments received on previous versions of this article, including from the editors and the anonymous peer reviewers.

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Keywords: human rights, environment, right to a healthy environment, due diligence, International Law Commission, EU.

Introduction

> Peace is a fundamental prerequisite to sustainable development and the full enjoyment of human rights, including the right to a clean, healthy and sustainable environment.[1]

Potential harm to human rights and the environment, including by corporate actors, is amplified in situations of conflict. This article will focus on applying the right to a clean, healthy and sustainable environment (right to a healthy environment) in relation to armed conflicts and corporate responsibility. In particular, the article will analyze and compare due diligence requirements in the EU Conflict Minerals Regulation (EU CMR) and the International Law Commission (ILC) Principles on Protection of the Environment in Relation to Armed Conflicts (ILC Principles/Draft Principles)[2] and examine how these align with the right to a healthy environment.

A number of recent developments have brought these issues to the forefront, making an analysis of the right to a healthy environment in relation to armed conflicts and corporate responsibility particularly timely. In 2021, the United Nations (UN) Human Rights Council (HRC) recognized the right to a healthy environment in its Resolution 48/13; this was followed by UN General Assembly Resolution 76/300, on the same topic, in 2022. Both resolutions address the role of non-State actors and businesses. ILC Principle 10, adopted by the ILC and subsequently taken note of by the UN General Assembly in 2022, focuses on due diligence by business enterprises, referring to the right to a healthy environment in the associated commentary. The EU CMR, which entered into force on 1 January 2021, provides another vehicle for understanding due diligence requirements in relation to armed conflicts and the interconnectedness of human rights, environmental protection and governance.[3] In addition, the importance of ensuring access to remedy and addressing potential harm to human rights and the environment by corporate actors has received increasing attention, including in relation to due diligence initiatives and litigation.

1 UN Special Rapporteur on Human Rights and the Environment, "World Environment Day Statement", 5 June 2022.

2 UNGA Res. 77/104, 7 December 2022. The resolution refers to "principles" and lists these in an Annex to the resolution, whereas the commentary refers to the "draft principles" adopted by the ILC. This article will thus use the terms "Principle(s)" for the final version recognized by the General Assembly and "Draft Principle(s)" when referring to the associated commentary.

3 Regulation (EU) 2017/821 of the European Parliament and of the Council Laying Down Supply Chain Due Diligence Obligations for Union Importers of Tin, Tantalum and Tungsten, Their Ores, and Gold Originating from Conflict-Affected and High-Risk Areas, OJ L 130, 17 May 2017 (EU CMR), pp. 1–20.

The need to better understand the nexus of human rights, the environment and corporations has also been highlighted by scholars.[4] While research has been undertaken on the environment and human rights and the right to a healthy environment generally,[5] this article seeks to contribute to an improved understanding of due diligence and the roles and responsibilities of corporate actors in relation to armed conflicts. In addition, while research exists on the nexus of the environment and human rights, and on the nexus of the environment and conflict,[6] these two areas have seldom been integrated.

To address this gap, this article analyzes due diligence requirements in ILC Principle 10 and the EU CMR in light of the right to a healthy environment and examines the effects on corporate responsibility. It begins by outlining the right to a healthy environment and the impacts of armed conflict on the environment and human rights, followed by a discussion on due diligence requirements in international law, international human rights law and international environmental law, and the tendency toward integrated human rights and environmental due diligence. The article then compares and analyzes the due diligence requirements in ILC Principle 10 and the EU CMR. Finally, the article concludes with a few suggestions and recommendations for further research.

The right to a healthy environment

In July 2022, the UN General Assembly adopted a resolution recognizing the right to a healthy environment.[7] The text was similar to a resolution adopted by the HRC in 2021, recognizing the right to a healthy environment and inviting the General Assembly to consider the matter.[8] The two resolutions refer to the role of businesses, with both recalling the UN Guiding Principles on Business and Human Rights (UNGPs), which "underscore the responsibility of all business

4 See e.g. Elisa Morgera, *Corporate Environmental Accountability in International Law*, 2nd ed., Oxford University Press, Oxford, 2020, p. 289; Stephen Turner, "Business Practices, Human Rights and the Environment", in James R. May and Erin Daly (eds), *Human Rights and the Environment: Legality, Indivisibility, Dignity and Geography*, Chap. VII of *Elgar Encyclopedia of Environmental Law*, Edward Elgar, Cheltenham, 2019, p. 384; Natasha Affolder, "Square Pegs and Round Holes? Environmental Rights and the Private Sector", in Ben Boer (ed.), *Environmental Law Dimensions of Human Rights*, Oxford University Press, Oxford, 2015, p. 17.

5 See e.g. Daniëlla Dam-de Jong and Saskia Wolters, "Through the Looking Glass: Corporate Actors and Environmental Harm Beyond the ILC", *Goettingen Journal of International Law*, Vol. 10, No. 1, 2020, p. 111. See also Mara Tignino, "Corporate Human Rights Due Diligence and Liability in Armed Conflicts: The Role of the ILC Draft Principles on the Protection of the Environment and the Draft Treaty on Business and Human Rights", *QIL Zoom-in*, Vol. 83, 2021, p. 47; Marie Davoise, "Business, Armed Conflict, and Protection of the Environment: What Avenues for Corporate Accountability?", *Goettingen Journal of International Law*, Vol. 10, No. 1, 2020, p. 151.

6 See e.g. Karen Hulme, "Using a Framework of Human Rights and Transitional Justice for Post-Conflict Environmental Protection and Remediation", in Carsten Stahn, Jens Iverson and Jennifer S. Easterday (eds), *Environmental Protection and Transitions from Conflict to Peace: Clarifying Norms, Principles, and Practices*, Oxford University Press, Oxford, 2017.

7 UNGA Res. 76/300, 28 July 2022.

8 HRC Res. 48/13, 8 October 2021.

enterprises to respect human rights", and with the HRC resolution further specifying that this includes "the rights to life, liberty and security of human rights defenders working in environmental matters, referred to as environmental human rights defenders".[9]

While the right to a healthy environment has not been expressed in any treaty at the international level, binding formulations of the right to a healthy environment exist at the regional level, and at least 150 countries have "constitutional rights and/or provisions on the environment".[10] In addition, Schabas considers that there is "compelling evidence for a human right to a safe, clean, healthy, and sustainable environment under customary international law".[11] For instance, a large number of States have referred to environmental concerns and the right to a healthy environment as part of the Universal Periodic Review.[12]

The HRC and General Assembly resolutions recognizing the right to a healthy environment were preceded by several decades of discussion and deliberation on the linkages between human rights and the environment. The 1972 Stockholm Declaration, which has often been referred to as the birth of modern international environmental law,[13] outlined the "fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being", and the "solemn responsibility to protect and improve the environment for present and future generations".[14] This duty of care concept from the second part of Principle 1 of the Stockholm Declaration recurred in the 1994 report of the UN Sub-Commission on Prevention of Discrimination and Protection of Minorities (UN Sub-

9 *Ibid.* Neither resolution refers specifically to conflict. The omission of a reference to environmental human rights defenders was noted with disappointment by several States in their statements following the adoption of Resolution 76/300: see e.g. Japan, New Zealand and EU statements in *Official Records of the General Assembly, Seventy-Sixth Session*, UN Doc. A/76/PV.97, 28 July 2022.

10 See Naysa Ahuja, Carl Bruch, Arnold Kreilhuber, Elizabeth Maruma Mrema and John Pendergrass, "Advancing Human Rights through Environmental Rule of Law", in J. R. May and E. Daly (eds), above note 4, p. 15. See also James R. May and Erin Daly, *Global Environmental Constitutionalism*, Cambridge University Press, New York, 2014; *Report of the Independent Expert on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment*, UN Doc. A/HRC/28/61, 3 February 2015, para. 73.

11 William A. Schabas, *The Customary International Law of Human Rights*, Oxford University Press, Oxford, 2021, p. 335.

12 *Ibid.*, fn. 34–45. See also *Analytical Study on the Relationship between Human Rights and the Environment: Report of the United Nations High Commissioner for Human Rights*, UN Doc. A/HRC/19/34, 16 December 2011, para. 31; Rebecca M. Bratspies, "Reasoning Up: Environmental Rights as Customary International Law", in John H. Knox and Ramin Pejan (eds), *The Human Right to a Healthy Environment*, Cambridge University Press, Cambridge, 2018, p. 128: "This chapter suggests that 'reasoning up' – looking to state practice in the form of domestic regulation – supports the conclusion that at least procedural environmental rights have crystallized into customary international law."

13 See e.g. Jonas Ebbesson, "Getting It Right: Advances of Human Rights and the Environment from Stockholm 1972 to Stockholm 2022", *Environmental Policy and Law*, Vol. 52, No. 2, 2022, p. 80; and, in the context of protection of the environment in relation to armed conflicts, *Official Records of the General Assembly, Sixty-Sixth Session*, Supplement No. 10, UN Doc. A/66/10, 2011, Annex E, para. 6.

14 Declaration of the United Nations Conference on the Human Environment, *Report of the United Nations Conference on the Human Environment*, UN Doc. A/CONF.48/14/Rev.1, 1973, Annex I, Principle 1.

Commission) and the associated proposed declaration and draft principles on human rights and the environment.[15]

In recent decades, human rights treaty bodies have increasingly recognized and referenced links between human rights and the environment.[16] This trend has sometimes been referred to as the "greening" of human rights.[17] As noted above, the right to a healthy environment has also been recognized and adopted as a legally binding obligation in numerous regional instruments,[18] and in domestic laws and constitutions.

The terms used to describe the right have varied across different times and geographic contexts, and the terminology has at times been criticized for being vague or open-ended.[19] While there is no universally recognized definition of the right to a healthy environment, it has often been characterized as containing substantive elements (clean air, a safe and stable climate, access to safe water and adequate sanitation, healthy and sustainably produced food, non-toxic environments in which to live, work, study and play, and healthy biodiversity and ecosystems) and procedural elements (access to information, access to meaningful participation in decision-making and access to justice).[20]

15 Commission on Human Rights, *Human Rights and the Environment: Final Report Prepared by Mrs. Fatma Zohra Ksentini, Special Rapporteur*, UN Doc. E/CN.4/Sub.2/1994/9, 6 July 1994, Annex I, Draft Principle 21: "All persons, individually and in association with others, have the duty to protect and preserve the environment." Regarding due diligence as a standard of care, see e.g. ILA Study Group on Due Diligence in International Law (ILA Study Group), *Second Report*, July 2016, p. 2; Lise Smit *et al.*, *Study on Due Diligence Requirements through the Supply Chain: Final Report*, European Commission, Directorate-General for Justice and Consumers, 2020, p. 262.

16 E.g. UN Human Rights Committee, General Comment No. 36, UN Doc. CCPR/C/GC/36, 3 September 2019, para. 62.

17 See e.g. Birgit Peters, "Clean and Healthy Environment, Right to, International Protection", in Anne Peters (ed.), *Max Planck Encyclopedia of Public International Law*, 2021, para. 8. See also Sanja Bogojevic and Rosemary Rayfuse (eds), *Environmental Rights in Europe and Beyond*, Hart, Oxford, 2018, p. 11; J. Ebbesson, above note 13, p. 88.

18 See e.g. African Charter on Human and Peoples' Rights, 1520 UNTS 217 (entered into force 21 October 1986), Art. 24; Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, 2161 UNTS 447 (entered into force 30 October 2001), Art. 1; Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (entered into force 22 April 2021) (Escazú Agreement), Art. 1.

19 Regarding criticism of the terms as vague or imprecise, see e.g. Stephen J. Turner, "Conclusion: Analysing the Development of Standards in the Field of Environmental Rights", in Stephen J. Turner, Dinah L. Shelton, Jona Razzaque, Owen McIntyre and James R. May (eds), *Environmental Rights: The Development of Standards*, Cambridge University Press, Cambridge, 2019, p. 392. See also David Boyd, *The Environmental Rights Revolution: A Global Study of Constitutions, Human Rights, and the Environment*, UBC Press, Vancouver, 2012, p. 33.

20 *Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment*, UN Doc. A/HRC/43/53, 30 December 2019, para. 2. See also UN Development Programme (UNDP), UN Environment Programme (UNEP) and Office of the UN High Commissioner for Human Rights (UN Human Rights), *What Is the Right to a Healthy Environment?*, Information Note, 2023.

Impacts of armed conflict on the environment and human rights, including the right to a healthy environment

Human rights and the environment are particularly at risk in relation to armed conflicts, in part due to governance challenges and lack of regulatory oversight in conflict-affected contexts.[21] The former Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises noted in his reports on the topic that it is "well established that some of the most egregious human rights abuses, including those related to corporations, occur in conflict zones".[22] UNGP 7 states that the "risk of gross human rights abuses is heightened in conflict-affected areas".[23]

Accordingly, an enhanced human rights due diligence is required by companies in conflict-affected contexts in order to comply with the UNGPs and the legal obligations underpinning them.[24] In its 2018 report to the General Assembly, the UN Working Group on Business and Human Rights noted that "in high-risk operating environments, such as conflict-affected areas, business enterprises need to exercise heightened human rights due diligence".[25] Together with the UN Development Programme (UNDP), the UN Working Group on Business and Human Rights issued guidance on heightened human rights due diligence in conflict-affected contexts in 2022.[26] The report notes that business activities in a conflict-affected area will influence conflict dynamics and that businesses should respect international humanitarian law standards.[27] As per UNGP 12, businesses may also need to consider extra standards in addition to international human rights law more generally.[28]

Reference to the importance of peace and security in the context of the right to a healthy environment was made in the 1994 report of the UN Sub-Commission,[29] and in doctrinal commentary to the report and proposed

21 D. Dam-de Jong and S. Wolters, above note 5, p. 117: "Given the volatility of the situation and the lack of regulatory oversight, there is an increased risk that corporations intentionally or unintentionally contribute to human rights abuses and/or inflict harm on the environment." See also Virginie Rouas, *Achieving Access to Justice in a Business and Human Rights Context: An Assessment of Litigation and Regulatory Responses in European Civil-Law Countries*, University of London Press, London, 2022, p. 4; M. Tignino, above note 5, p. 47.

22 See *Report of the Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises, John Ruggie*, UN Doc. A/HRC/8/5, 7 April 2008, esp. paras 16, 47–49.

23 *Report of the Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises, John Ruggie*, UN Doc. A/HRC/17/31, 21 March 2011, Annex.

24 *Report of the Working Group on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises – Business, Human Rights and Conflict-Affected Regions: Towards Heightened Action*, UN Doc. A/75/212, 21 July 2020, paras 44–45.

25 *Report of the Working Group on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises*, UN Doc. A/73/163, 16 July 2018, para. 14(c).

26 UNDP, *Heightened Human Rights Due Diligence for Business in Conflict-Affected Contexts: A Guide*, 2022.

27 *Ibid.*, p. 10.

28 UN Doc. A/HRC/17/31, above note 23, commentary to UNGP 12: "Depending on circumstances, business enterprises may need to consider additional standards." See also UN Doc. A/75/212, above note 24.

29 UN Doc. E/CN.4/Sub.2/1994/9, above note 15, paras 111–116 and Annex I, Principle 1.

declaration.[30] The 1992 Rio Declaration includes a requirement in Principle 10 that everyone shall have access to information, participation and effective remedies in environmental matters, and also states in Principle 24 that since warfare "is inherently destructive of sustainable development", States must "respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary".[31]

In more recent years, two UN Environment Assembly resolutions regarding armed conflicts and the environment have also recognized that "sustainable development and the protection of the environment contribute to human well-being and the enjoyment of human rights".[32] The UN Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment (UN Special Rapporteur on Human Rights and the Environment) has noted that

> more work is necessary to clarify how human rights norms relating to the environment apply to specific areas, including … the responsibilities of businesses in relation to human rights and the environment, the effects of armed conflict on human rights and the environment, and obligations of international cooperation in relation to multinational corporations and transboundary harm.[33]

In addition, the 2021 HRC resolution establishing the mandate of a Special Rapporteur on the Promotion and Protection of Human Rights in the Context of Climate Change notes that "those living in conflict areas" are among those most acutely affected by the consequences of climate change.[34]

The UN Working Group on Business and Human Rights has outlined key elements that enhanced human rights due diligence should meet, including complementing the requirements for businesses to assess, avoid and mitigate adverse human rights impacts with a conflict-sensitive approach.[35] In order for businesses to operate in sensitive environments, enhanced human rights due diligence should include respect for relevant standards, including international environmental law norms.[36] A better understanding of enhanced human rights due diligence is needed, including to identify and address "potential negative impacts to the environment and human health".[37] In the following section, the article will explore opportunities for integrated human rights and environmental

30 See e.g. Neil A. F. Popovic, "In Pursuit of Environmental Human Rights: Commentary on the Draft Declaration of Principles on Human Rights and the Environment", *Columbia Human Rights Law Review*, Vol. 27, No. 3, 1996, pp. 502–504.

31 *Report of the United Nations Conference on Environment and Development*, UN Doc. A/CONF.151/26 (Vol. I), 12 August 1992, Annex I. See also D. Boyd, above note 19, pp. 90–91.

32 UNEA Res. 2/15, 27 May 2016, Preamble; UNEA Res. 3/1, 30 January 2018, Preamble.

33 *Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment*, UN Doc. A/HRC/37/59, 24 January 2018, para. 18.

34 HRC Res. 48/14, 8 October 2021, Preamble.

35 UN Doc. A/75/212, above note 24, para. 44; see also UN Doc. A/73/163, above note 25.

36 See M. Tignino, above note 5, p. 60.

37 *Ibid.*, p. 49.

due diligence, and how the right to a healthy environment could contribute to enhanced due diligence standards.

Due diligence

This section will analyze the concept of due diligence and existing instruments, highlighting opportunities and challenges for their effective implementation and ability to support enhanced due diligence. Due diligence is defined by the *Max Planck Encyclopedia of Public International Law* as an "obligation of conduct on the part of a subject of law".[38] The International Law Association (ILA) Study Group on Due Diligence in International Law (ILA Study Group) refers to due diligence as "concerned with supplying a standard of care against which fault can be assessed",[39] contrasting due diligence obligations with strict or absolute liability.[40]

Ever since the *Corfu Channel* case before the International Court of Justice (ICJ), due diligence has been linked with the principle of prevention.[41] For instance, the latest draft of the proposed Legally Binding Instrument on Business and Human Rights includes a reference to due diligence under the heading "Prevention" (Article 6.3).[42]

Overall, several authors have highlighted the benefit of due diligence as a dynamic and flexible standard, making it possible to apply in many different contexts.[43] This flexibility has nonetheless also led to criticisms of such standards being "weak" or "elusive".[44] In addition, commentators have cautioned against due diligence requirements that are too wide, citing for instance the possibility that such measures may "dilute the link with the risk, and create legal uncertainty".[45]

38 Timo Koivurova and Krittika Singh, "Due Diligence", in Anne Peters (ed.), *Max Planck Encyclopedia of Public International Law*, 2022, para. 1. See also ICRC, *Guidelines on the Protection of the Natural Environment in Armed Conflict: Rules and Recommendations Relating to the Protection of the Natural Environment under International Humanitarian Law, with Commentary*, Geneva, 2020, para. 46.

39 ILA Study Group, above note 15, p. 2.

40 *Ibid*, p. 2. On this contrast between strict liability and due diligence, see also Lise Smit, Claire Bright and Stuart Neely, "Muddying the Waters: The Concept of a 'Safe Harbour' in Understanding Human Rights Due Diligence", *Business and Human Rights Journal*, Vol. 8, No. 1, 2023, p. 8.

41 Joanna Kulesza, *Due Diligence in International Law*, Queen Mary Studies in International Law, Vol. 26, Brill Nijhoff, Leiden, 2016, p. 262: "due diligence is the source of the customary principle of prevention".

42 HRC, *Text of the Third Revised Draft Legally Binding Instrument with Textual Proposals Submitted by States during the Seventh and the Eighth Sessions of the Open-Ended Intergovernmental Working Group on Transnational Corporations and Other Business Enterprises with Respect to Human Rights*, UN Doc. A/HRC/52/41/Add.1, 23 January 2023, pp. 22–29.

43 Alice Ollino, *Due Diligence Obligations in International Law*, Cambridge University Press, Cambridge, 2022, p. 270. See also Heike Krieger and Anne Peters, "Due Diligence and Structural Change in the International Legal Order", in Heike Krieger, Anne Peters and Leonhard Kreuzer (eds), *Due Diligence in the International Legal Order*, Oxford University Press, Oxford, 2020, p. 356, noting that "due diligence works as a legal tool to *restrict* or to *create* accountability".

44 A. Ollino, above note 43, p. 266.

45 Federica Violi, "The Function of the Triad 'Territory', 'Jurisdiction', and 'Control'", in H. Krieger, A. Peters and L. Kreuzer (eds), above note 43, p. 91.

The link between a due diligence standard and procedural duties also provides a connection to the procedural elements of the right to a healthy environment,[46] as well as the corporate responsibilities outlined by the UN Special Rapporteur on Human Rights and the Environment in the Framework Principles on Human Rights and the Environment, calling for human rights due diligence and "meaningful consultation with potentially affected groups and other relevant stakeholders".[47]

The next sections of the article will outline key elements of the due diligence concept in international environmental law and international human rights law before identifying a few points about the trend of integrated human rights and environmental due diligence.[48]

In international environmental law

Famously, the *Trail Smelter* case required a due diligence obligation of prevention of significant harm to another State, and not a prohibition of all possible harm.[49] The level of due diligence required depends in part on aspects such as the gravity of outcome, capabilities, and the moment of assessment.[50] The 2001 ILC Draft Articles on Prevention of Transboundary Harm from Hazardous Activities clarified that the "degree of care is proportional to the degree of hazard involved".[51]

It has been suggested that due diligence in fact has a broader scope than the prevention principle, since while the prevention principle covers "significant" or "material" harm, the due diligence requirement does not necessarily include such a restriction.[52] In *Pulp Mills*, the ICJ considered that the obligation to carry out an environmental impact assessment where there is a risk of a significant adverse impact "may now be considered a requirement under general international law".[53] The judgment also included a discussion on the separation between procedural and substantive norms, with the majority noting that there is "a functional link, in regard to prevention, between the two categories of obligations …, but that link does not prevent the States parties from being required to

46 H. Krieger and A. Peters, above note 43, p. 363: "In various subfields of international law, procedural duties (duties to notify, warn, inform or consult) are tied to the due diligence standard."

47 UN Doc. A/HRC/37/59, above note 33, Annex, para. 22; see also para. 35. See also Chiara Macchi, *Business, Human Rights and the Environment: The Evolving Agenda*, T. M. C. Asser Press, The Hague, 2022, pp. 94–95.

48 For further discussion on due diligence in international humanitarian law specifically, see e.g. Marco Longobardo, "Due Diligence in International Humanitarian Law", in H. Krieger, A. Peters and L. Kreuzer (eds), above note 43; ILA Study Group, *First Report*, 2014, pp. 11–14.

49 T. Koivurova and K. Singh, above note 38, para. 29. See also Leslie-Anne Duvic-Paoli, *The Prevention Principle in International Environmental Law*, Cambridge University Press, Cambridge, 2018.

50 Pierre-Marie Dupuy, Ginevra Le Moli and Jorge E. Viñuales, "Customary International Law and the Environment", in Lavanya Rajamani and Jacqueline Peel (eds), *The Oxford Handbook of International Environmental Law*, Oxford University Press, Oxford, 2021, p. 395. See also J. Kulesza, above note 41, p. 269, regarding the required duty of care of "a good government".

51 *Official Records of the General Assembly, Fifty-Sixth Session*, Supp. 10, UN Doc. A/56/10, 2001, Chap. V, commentary to Draft Article 3, para. 18.

52 P.-M. Dupuy, G. Le Moli and J. Viñuales, above note 50, p. 394.

53 ICJ, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, *ICJ Reports 2010*, p. 14, para. 204.

answer for those obligations separately".[54] In their joint dissenting opinion, Judges Al-Khasawneh and Simma stated that the "conclusion whereby non-compliance with the pertinent procedural obligations has eventually had no effect on compliance with the substantive obligations is a proposition that cannot be easily accepted".[55]

Whether the international legal ecosystem can be said to include two harm prevention standards or one standard which has evolved into a second continues to be discussed in the doctrine, as does the degree of separation between procedural and substantive norms more generally.[56] It is nonetheless clear from the decisions of the ICJ and the associated commentary that due diligence comprises both substantive and procedural aspects.[57]

Due diligence in international environmental law is also informed by extraterritoriality in multilateral environmental agreements.[58] As Vordermayer notes, this tendency can be seen as a corresponding and similar development to the "progressive developments in the context of [economic, social and cultural] rights, in terms of the emergence of home state duties to regulate non-state actor activities abroad".[59]

In international human rights law

The importance and relevance of due diligence obligations for businesses has been emphasized within the international human rights ecosystem, with commentators noting that due diligence pertaining to non-State actors is "especially a relevant question in the context of business activities, as many multinational corporations wield economic and political powers all over the world".[60] In this context, due diligence has also been described as "the standard of conduct necessary to comply with a duty to protect".[61]

Within human rights law, due diligence has been considered as outlining a standard of conduct on the one hand, and denoting management of risk on the other. Baade notes that the UNGPs seem to include both perspectives when contrasting UNGPs 15–21 with UNGPs 11 and 13.[62] This distinction is

54 *Ibid.*, para. 79.

55 *Ibid.*, Joint Dissenting Opinion of Judges Al-Khasawneh and Simma, para. 26.

56 See T. Koivurova and K. Singh, above note 38, para. 31, noting that "[s]cholarly discussion on this issue is ongoing and of relevance to the understanding of due diligence in these situations". See also Jutta Brunnée, *Procedure and Substance in International Environmental Law*, Brill Nijhoff, Leiden, 2020, pp. 145–146.

57 See e.g. Jutta Brunnée, "Harm Prevention", in L. Rajamani and J. Peel (eds), above note 50, p. 274.

58 See e.g. Peter H. Sand, "Origin and History", in L. Rajamani and J. Peel (eds), above note 50, p. 64: "One much-neglected aspect … has been the extraterritorial application of multilateral environmental agreements."

59 Markus Vordermayer, "The Extraterritorial Application of Multilateral Environmental Agreements", *Harvard International Law Journal*, Vol. 59, No. 1, 2018, p. 124.

60 T. Koivurova and K. Singh, above note 38, para. 44.

61 Björnstjern Baade, "Due Diligence and the Duty to Protect Human Rights", in H. Krieger, A. Peters and L. Kreuzer (eds), above note 43, p. 92.

62 *Ibid.*, p. 95: "Whether the term 'due diligence' is used coherently in the Guiding Principles has recently become controversial." See also ILA Study Group, above note 15, pp. 29–30; Jonathan Bonnitcha and Robert McCorquodale, "The Concept of 'Due Diligence' in the UN Guiding Principles on Business and Human Rights", *European Journal of International Law*, Vol. 28, No. 3, 2017, p. 909. For a different perspective, see John Ruggie and John Sherman III, "The Concept of 'Due Diligence' in the

important as the focus on risk management seeks to identify risks to the business as compared to impacts on stakeholders.[63] It is interesting in this context to note that the EU CMR refers to the five-step due diligence process under the heading of "Risk Management Obligations".[64]

The UNGPs outline a four-step approach of human rights due diligence in UNGP 17;[65] this is similar to the Organisation for Economic Co-operation and Development (OECD) due diligence requirements, which delineate five steps. These standards have in turn influenced and informed the understanding of the EU CMR and ILC Principle 10, both of which explicitly state that the standards therein build upon the OECD standards and the UNGPs.

Several UN human rights mechanisms have contributed to the understanding of due diligence. In its General Comment No. 31 (2004), the Human Rights Committee called for the exercise of "due diligence to prevent, punish, investigate or redress the harm caused by [violations] by private persons or entities".[66] In 2017, the Committee on Economic, Social and Cultural Rights (CESCR) noted that there is a duty for States to "adopt a legal framework requiring business entities to exercise human rights due diligence in order to identify, prevent and mitigate the risks of violations of Covenant rights".[67] In addition, the CESCR expands on extraterritorial obligations in its General Comment and notes that States have an obligation to take "steps to prevent and redress infringements of Covenant rights that occur outside their territories due to the activities of business entities over which they can exercise control".[68] Duvic-Paoli notes that while "a general extraterritorial obligation of prevention under human rights law has not yet consolidated", there is "good support for the obligation both in the scholarship and in practice".[69]

UN Guiding Principles on Business and Human Rights: A Reply to Jonathan Bonnitcha and Robert McCorquodale", *European Journal of International Law*, Vol. 28, No. 3, 2017.

63 Robert McCorquodale, "Human Rights Due Diligence Instruments: Evaluating the Current Legislative Landscape", in Axel Marx, Geert Van Calster, Jan Wouters, Kari Otteburn and Diana Lica (eds), *Research Handbook on Global Governance, Business and Human Rights*, Edward Elgar, Cheltenham, 2022, p. 123. Regarding the risks of "cosmetic" due diligence and "bluewashing", see also Eliana Cusato, *The Ecology of War and Peace: Marginalising Slow and Structural Violence in International Law*, Cambridge University Press, Cambridge, 2021, pp. 176–177; Fatimazahra Dehbi and Olga Martin-Ortega, "An Integrated Approach to Corporate Due Diligence from a Human Rights, Environmental, and TWAIL Perspective", *Regulation and Governance*, 2023, p. 8.

64 EU CMR, above note 3, Art. 5.

65 (1) Identifying and assessing adverse human rights impacts, (2) integrating findings from impact assessments across company processes, (3) tracking effectiveness, and (4) communicating how impacts are being addressed. See e.g. UN Doc. A/73/163, above note 25, para. 10.

66 Human Rights Committee, General Comment No. 31, "The Nature of the General Legal Obligation Imposed on States Parties to the Covenant", UN Doc. CCPR/C/21/Rev.1/Add.13, 29 March 2004, para. 8.

67 UN Committee on Economic, Social and Cultural Rights, "General Comment No. 24 on State Obligations under the International Covenant on Economic, Social and Cultural Rights in the Context of Business Activities", UN Doc. E/C.12/GC/24, 23 June 2017, para. 16.

68 *Ibid.*, para. 30.

69 L.-A. Duvic-Paoli, above note 49, pp. 236–237. See also *Report of the Independent Expert on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment*, UN Doc. A/HRC/25/53, 30 December 2013, para. 64: "[M]ost of the sources reviewed that have addressed the issue do indicate that States have obligations to protect human rights, particularly economic, social and cultural rights, from the extraterritorial environmental effects of actions taken within their territory."

In 2017, the Inter-American Court of Human Rights (IACtHR) issued an Advisory Opinion calling for activities to minimize risks to the environment and human rights, including through environmental impact studies, licensing, and supervision. In the Advisory Opinion, the Court stated:

> Most environmental obligations are based on this duty of due diligence. The Court reiterates that an adequate protection of the environment is essential for human well-being, and also for the enjoyment of numerous human rights, particularly the rights to life, personal integrity and health, as well as the right to a healthy environment itself.[70]

The standard of due diligence is also referenced as an obligation of conduct that requires "appropriate measures".[71] The formulation "appropriate measures" was re-emphasized in the Court's decision in *Lhaka Honhat v. Argentina*, which also stated that due diligence must be proportionate to the level of risk of environmental harm.[72]

In a 2022 report to the UN General Assembly, the UN Special Rapporteur on Human Rights and the Environment called upon States to "enact legislation requiring businesses that contribute to climate change, biodiversity loss, pollution and other forms of environmental degradation to conduct inclusive and rigorous human rights and environmental due diligence",[73] and noted that such regulation should cover the full supply chain.[74] In a dedicated policy brief on human rights and environmental due diligence legislation, the Special Rapporteur emphasized the possibility for robust due diligence regulations to prevent human rights and environmental harms, while also noting that existing regulations are frequently "fraught with inconsistencies, ambiguities, exemptions and other weaknesses that prevent them from adequately responding to the often-overlapping human rights and environmental abuses that are plaguing rightsholders and ecosystems worldwide".[75] The brief defines "vulnerable rightsholders" as including "protected populations under occupation or in conflict-affected areas".[76]

70 IACtHR, *Medio ambiente y derechos humanos*, Advisory Opinion No. OC 23-17, Series A, No. 23, 15 November 2017, para. 124.
71 *Ibid.*, para. 123.
72 IACtHR, *Comunidades Indígenas Miembros de la Asociación Lhaka Honhat (Nuestra Tierra) v. Argentina*, Series C, No. 400, 6 February 2020, para. 208.
73 *Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment*, UN Doc. A/77/284, 10 August 2022, para. 38.
74 *Ibid.*, para. 81.
75 UN Special Rapporteur on Human Rights and the Environment, *Essential Elements of Effective and Equitable Human Rights and Environmental Due Diligence Legislation*, Policy Brief No. 3, June 2022, p. 5.
76 *Ibid.*, p. 21.

A tendency towards integration: Human rights and environmental due diligence

Recent years have seen an increase in national and regional standards and regulations on human rights and environmental due diligence, such as in France, Germany and the EU.[77] In addition, there has been a tendency to "harden" due diligence norms regarding human rights abuses and environmental impacts from voluntary standards to binding regulations.[78]

The UN Working Group on Business and Human Rights has emphasized in its report on due diligence that the practice of human rights due diligence has "moved beyond the niche realm of socially responsible investors to become part of a wider trend of greater focus on managing the social impact of business and integrating environmental, social and governance considerations into mainstream investment decision-making".[79] This integrative approach was also highlighted in a study on due diligence requirements through the supply chain developed for the European Commission, which noted that the

> evolution and the insertion of human rights due diligence, beyond the requirements for business of [human rights impact assessments] as a onetime activity, have environmental implications. Firstly, because the right to a healthy environment is recognized as a human right, and secondly because the enjoyment of many other human rights requires a healthy environment.[80]

Nonetheless, commentators have also highlighted potential risks. For instance, without "well-targeted and appropriate legislation, there is a risk that a 'tick-box' approach will occur so that existing corporate practices may continue".[81] In addition, "transplanting" or integrating a concept from one area of the law to another runs the risk that its application becomes decontextualized and/or ahistorical.[82]

Human rights and environmental due diligence in relation to armed conflicts: Comparing the ILC Principles with the EU Conflict Minerals Regulation

The EU Conflict Minerals Regulation

The EU CMR was developed to address linkages between conflict and human rights abuses and the sourcing of tin, tantalum, tungsten and gold (3TG).[83] One of the

77 C. Macchi, above note 47, pp. 95–104.
78 See e.g. Colin Mackie, "Due Diligence in Global Value Chains: Conceptualizing 'Adverse Environmental Impact'", *Review of European, Comparative and International Environmental Law*, Vol. 30, No. 3, 2021, p. 298.
79 UN Doc. A/73/163, above note 25, para. 86.
80 L. Smit *et al.*, above note 15, p. 357.
81 R. McCorquodale, above note 63, p. 141.
82 Natasha Affolder, "Contagious Environmental Lawmaking", *Journal of Environmental Law*, Vol. 31, No. 2, 2019, pp. 190–195 (referring particularly to environmental impact assessments).
83 See e.g. EU CMR, above note 3, Preamble, para. 14.

stated aims of the regulation was to complement the Dodd-Frank Act in the United States,[84] which also focuses on 3TG. The regulation entered into force on 1 January 2021.

Article 2(d) of the EU CMR states that

> "supply chain due diligence" means the obligations of Union importers of tin, tantalum and tungsten, their ores, and gold in relation to their management systems, risk management, independent third-party audits and disclosure of information with a view to identifying and addressing actual and potential risks linked to conflict-affected and high-risk areas to prevent or mitigate adverse impacts associated with their sourcing activities.

The phrase "conflict-affected and high-risk areas" is further defined in Article 2 (f) as "areas in a state of armed conflict or fragile post-conflict as well as areas witnessing weak or non-existent governance and security, such as failed states, and widespread and systematic violations of international law, including human rights abuses".

Drawing on the *OECD Due Diligence Guidance for Responsible Supply Chain of Minerals from Conflict-Affected Areas* (OECD Guidance), the EU CMR outlines a five-step process of due diligence, requiring importers to (1) establish management systems, (2) identify and assess the risk of adverse impacts in the supply chain, (3) develop and implement a strategy to respond to identified risks, (4) carry out independent third-party audits, and (5) report on supply chain due diligence annually.[85] As noted by several commentators, this approach is similar to that outlined in the UNGPs, and integrated in the OECD Guidance.[86] The geographic scope covers potentially all countries linked to EU importers, which is broader than the Dodd-Frank Act's focus on the Democratic Republic of the Congo and neighbouring countries.[87]

While welcomed as a step towards greater transparency and implementation of the UNGPs,[88] the EU CMR has been critiqued on several accounts. For instance, it has been noted that the development and implementation of the regulation does not require consulting "individuals within the countries concerned directly impacted by it".[89] In addition, the focus on 3TG limits the application of the regulation,[90] with the concern that this might have implications for the aim of establishing a "level playing field" with other

84 See e.g. Lena Partzsch, "The New EU Conflict Minerals Regulation: Normative Power in International Relations?", *Global Policy*, Vol. 9, No. 4, 2018, p. 479.

85 EU CMR, above note 3, Arts 4–7. See also L. Smit *et al.*, above note 15, pp. 167–168.

86 R. McCorquodale, above note 63, p. 132. See also D. Dam-de Jong and S. Wolters, above note 5, p. 143, discussing the linkages between the OECD Guidance and the associated five-step approach building on the human rights due diligence process outlined in UNGP 17.

87 Chiara Macchi, "A Glass Half Full: Critical Assessment of EU Regulation 2017/821 on Conflict Minerals", *Journal of Human Rights Practice*, Vol. 2, No. 2, 2021, p. 276.

88 *Ibid.*, p. 279: "The Regulation, generally speaking, constitutes a positive development both in an EU law perspective and from the point of view of the implementation of the UNGPs."

89 Phoebe Okowa, "The Pitfalls of Unilateral Legislation in International Law: Lessons from Conflict Minerals Legislation", *International and Comparative Law Quarterly*, Vol. 69, No. 3, 2020, p. 710.

90 *Ibid.*, p. 711.

sectors,[91] and that such an approach will "fail to prevent or address adverse impacts which take place outside of this sector".[92] In addition, several commentators have highlighted the limitation that the regulation does not apply to downstream corporations directly,[93] and the weak system of enforcement,[94] leading to limited accountability and access to justice for those affected by corporate malpractice across the supply chain. While increased transparency requirements are important, accountability does not necessarily follow from such regulation.[95] Revised standards on greater access to justice, through e.g. legal aid and shifting the burden of proof, could serve as pathways to addressing procedural hurdles and contributing to the effective enjoyment of the right to healthy environment.[96]

In general, the EU CMR can be seen as a "partial response" to address abuses across the supply chain.[97] The regulation focuses on certain "choke points" or "control points" in the supply chain through which most materials pass and which are thus considered to be "best placed to track the materials" concerned.[98]

The OECD Guidance refers to the *OECD Guidelines for Multinational Enterprises* (MNE Guidelines) as a relevant instrument for assessing supply chain risks.[99] In 2020–22, the OECD undertook a stocktake of the MNE Guidelines, which identified the need for further detail on the "scope of environmental impacts to be addressed and the interconnections between the human rights and environmental chapters, including reference to the right to a healthy environment" as well as "further clarity on obligations relating to climate due diligence in particular and how this intersects with human rights due diligence".[100] Thus, it is possible that the continuous updating of OECD standards and their implementation will contribute to a further alignment of the due diligence requirements in the OECD Guidance and associated regulations with the right to a healthy environment.[101]

91 See e.g. C. Macchi, above note 87, p. 283.
92 L. Smit *et al.*, above note 15, p. 226.
93 Luis Miguel Vioque, "A Proposal for Criminal Liability for Breach of Due Diligence Obligations: The European Conflict Minerals Regulation as an Example", *European Criminal Law Review*, Vol. 11, No. 1, 2021, p. 81. See also C. Macchi, above note 87, p. 282.
94 C. Macchi, above note 87, p. 283.
95 Sara Ghebremusse, "The Shortcomings of Regulating Transparency for Sustainable Development in African Mining", in Beate Sjåfjell, Carol Liao and Aikaterini Argyrou (eds), *Innovating Business for Sustainability: Regulatory Approaches in the Anthropocene*, Edward Elgar, Cheltenham, 2022, p. 149.
96 Regarding burden of proof, see e.g. UN Special Rapporteur on Human Rights and the Environment, above note 75, p. 25; UN Doc. E/C.12/GC/24, above note 67, para. 45.
97 C. Macchi, above note 87, p. 281.
98 *Ibid.*, pp. 282, 284.
99 OECD, *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*, 3rd ed., 2016, p. 42.
100 OECD, *Stocktaking Report on the OECD Guidelines for Multinational Enterprises*, 2022, pp. 57–58.
101 See also cases before OECD National Contact Points (NCPs) referring to the linkages between human rights and the environment, e.g. Norwegian and Swedish NCPs, *Jinjevaerie Saami Village v. Statkraft AS*; Dutch NCP, *Oxfam Novib, Greenpeace Netherlands, BankTrack and Friends of the Earth Netherlands (Milieudefensie) v. ING*.

The ILC Principles on Protection of the Environment in Relation to Armed Conflicts

Prompted in part by the recommendations of an expert seminar and subsequent report by the International Committee of the Red Cross (ICRC) and UN Environment Programme (UNEP),[102] the topic "Protection of the Environment in Relation to Armed Conflicts" was included in the long-term programme of work of the ILC in 2011,[103] and was included in the current programme of work at the 65th session in 2013.[104] In 2022, a set of Draft Principles was adopted by the Commission,[105] and later taken note of by UN General Assembly Resolution 77/104, which encouraged their widest possible dissemination.[106] The ILC commentary to Draft Principle 10 notes that the Principle has been phrased as a recommendation,[107] and that "due diligence by business enterprises" refers to a "wide network of frameworks" which include "nonbinding guidelines as well as binding regulations at the national or regional level".[108] The preamble of General Assembly Resolution 77/104 also notes that the Principles provide recommendations for the progressive development of international law "to the extent that they do not reflect customary or treaty-based obligations of States, as applicable".[109]

The Principles are structured in accordance with general temporal phases (before, during and after armed conflicts) and include two provisions specifically focusing on business: Principle 10 on due diligence and Principle 11 on corporate liability.

The general importance of Principles 10 and 11 has been highlighted by several authors, with Wolters and Dam-de Jong noting that their inclusion in the (then-Draft) Principles is "highly significant, not in the least because of the involvement of corporations in the illicit exploitation of natural resources financing armed conflicts, which is a prevalent cause of environmental harm in contemporary armed conflicts".[110] It has also been suggested that the Principles overall add "an international legal dimension to what some may consider to be existing ethical responsibilities".[111] This aligns with the general tendency of a

102 ICRC/UNEP technical seminar organized in March 2009 in Nairobi, as referenced in David Jensen and Silja Halle (eds), *Protecting the Environment during Armed Conflict: An Inventory and Analysis of International Law*, UNEP, 2009.

103 UN Doc. A/66/10, above note 13, para. 365.

104 *Official Records of the General Assembly, Sixty-Eighth Session*, Supp. 10, UN Doc. A/68/10, 2013, para. 167.

105 *Official Records of the General Assembly, Seventy-Seventh Session*, Supp. 10, UN Doc. A/77/10, 2022, paras 52–54.

106 See above note 2.

107 UN Doc. A/77/10, above note 105, Annex E, commentary to Draft Principle 10, para. 1.

108 *Ibid.*, para. 2.

109 UNGA Res. 77/104, above note 2, Preamble.

110 D. Dam-de Jong and S. Wolters, above note 5, p. 113. See also Daniëlla Dam-de Jong and Britta Sjöstedt, "Enhancing Environmental Protection in Relation to Armed Conflict: An Assessment of the ILC Draft Principles", *Loyola of Los Angeles International and Comparative Law Review*, Vol. 44, No. 2, 2021, p. 141.

111 Alexandra Wormald, "Protecting the Environment during and after Armed Conflict, the International Law Commission and an Overdue Due Diligence Duty for Corporations: Good in Principle?", *Journal of International Humanitarian Legal Studies*, Vol. 12, No. 2, 2021, p. 317.

"hardening" of soft law and standards regarding corporate conduct and the shift from voluntary standards like the OECD Guidance to binding measures such as the EU CMR and the proposed EU Corporate Sustainability Due Diligence Directive.[112]

Principle 10 on "Due Diligence by Business Enterprises" reads:

> States should take appropriate measures aimed at ensuring that business enterprises operating in or from their territories, or territories under their jurisdiction, exercise due diligence with respect to the protection of the environment, including in relation to human health, when acting in an area affected by an armed conflict. Such measures include those aimed at ensuring that natural resources are purchased or otherwise obtained in an environmentally sustainable manner.

During the discussions at the ILC and in submissions from States and observers, the reference to "human health" was considered at length.[113] For instance, submissions by civil society and the International Union for Conservation of Nature (IUCN) called for revising the reference.[114] The commentary underlines "the close link between environmental degradation and human health as affirmed by international environmental instruments, regional treaties and case law", and refers to the "broad recognition of the right to a safe, clean, healthy and sustainable environment both at the national and international levels".[115] The fact that the commentary to Draft Principle 10 explicitly refers to the right to a healthy environment is significant since ILC commentaries are "crucial for the identification and interpretation of rules"[116] and have been treated as "supplementary means of treaty interpretation" and as "the context in which draft provisions are to be interpreted".[117]

The reference to the importance of the environment for the enjoyment of human rights in the preamble further underscores this close link between the environment and human rights as part of the context against which the Principles should be interpreted.[118] The ILC Special Rapporteur also referred to international human rights law as the legal foundation for Principle 10.[119]

112 See e.g. Tamás Szabados, "Multilevel Hardening in Progress – Transition from Soft Towards Hard Regulation of CSR in the EU", *Maastricht Journal of European and Comparative Law*, Vol. 28, No. 1, 2021.

113 See e.g. "Protection of the Environment in Relation to Armed Conflicts: Statement of the Chair of the Drafting Committee, Mr. Claudio Grossman Guiloff", 8 July 2019, p. 9. See also D. Dam-de Jong and S. Wolters, above note 5, p. 115.

114 *Protection of the Environment in Relation to Armed Conflicts: Comments and Observations Received from Governments, International Organizations and Others*, UN Doc. A/CN.4/749, 17 January 2022, p. 169.

115 UN Doc. A/77/10, above note 105, commentary to Draft Principle 10, para. 11.

116 Danae Azaria, "The Working Methods of the International Law Commission: Adherence to Methodology, Commentaries and Decision-Making", in United Nations, *Seventy Years of the International Law Commission: Drawing a Balance for the Future*, Koninklijke Brill, Leiden, 2021, p. 177.

117 *Ibid.*, p. 180.

118 See e.g. Christian Djeffal, *Static and Evolutive Treaty Interpretation: A Functional Reconstruction*, Cambridge University Press, Cambridge, 2016, section 6.4: "The context of the treaty comprises according to Art. 31(2) [of the Vienna Convention on the Law of Treaties] *inter alia* the preamble and annexes to the treaty." See also section 7.1.

119 *Second Report on Protection of the Environment in Relation to Armed Conflicts by Marja Lehto, Special Rapporteur*, UN Doc A/CN.4/728, 27 March 2019, paras 67–103. See also D. Dam-de Jong and S. Wolters, above note 5, p. 127.

Comparison between the ILC Principles and the EU Conflict Minerals Regulation

There are a number of similarities and differences between the ILC Principles and the EU CMR. The ILC Principles contribute to extending extraterritorial application to obligations under international law. In her 2022 report, Special Rapporteur Marja Lehto states that as the phrase "operating in or from their territories" has been "interpreted in the OECD practice to cover both territory and jurisdiction", it should also be understood in this manner as part of the ILC Principles.[120] The commentary to Draft Principle 10 also states that "the phrase [operating in or from their territories] may be interpreted to cover both territory and jurisdiction".[121] Wolters and Dam-de Jong note in their analysis of the 2019 version of the Draft Principles and commentaries that "with the proposal of Draft Principle 10, the trend of extending obligations extraterritorially is further recognized and the concept is strengthened".[122] This extension is important to avoid, for instance, businesses adopting "policies domestically for subsidiaries to carry out activities abroad that will violate environmental rights in conflict zones".[123]

The EU CMR has been identified as increasing "the number of EU trade rules with extraterritorial reach aimed at pursuing public values (such as the protection of the environment or internationally recognised human rights) outside the EU".[124] As noted above, the regulation draws on similar materials to the ILC Principles, including the OECD Guidance, which has been considered to have extraterritorial reach given that due diligence should be undertaken throughout the global supply chain.[125]

Historically, international environmental law has integrated extraterritorial effects to a greater extent than international human rights law.[126] Dienelt, writing on

120 See also *Third Report on Protection of the Environment in Relation to Armed Conflicts, by Marja Lehto, Special Rapporteur*, UN Doc. A/CN.4/750, 16 March 2022, para. 107.

121 UN Doc. A/77/10, above note 105, commentary to Draft Principle 10, para. 8. See also D. Dam-de Jong and S. Wolters, above note 5, p. 115.

122 D. Dam-de Jong and S. Wolters, above note 5, p. 139.

123 *Ibid.*, pp. 138–139.

124 Valentina Grado, "The EU 'Conflict Minerals Regulation': Potentialities and Limits in the Light of the International Standards on Responsible Sourcing", *Italian Yearbook of International Law*, Vol. 27, 2017, p. 249.

125 *Ibid.*, p. 242 fn. 19. Some scholars have outlined potential risks with extraterritorial application of supply chain due diligence provisions, including that without meaningful participation and access to justice for affected populations, such application could aggravate social, economic and environmental injustices: see e.g. F. Dehbi and O. Martin-Ortega, above note 63, pp. 6–8; P. Okowa, above note 89. These risks could be mitigated by implementation of due diligence requirements that respect, protect and fulfil the right to a healthy environment, particularly given the emphasis on meaningful participation and access to justice as part of the right, and the large number of regional and domestic provisions recognizing the right. See e.g. Okowa, above note 89, p. 716: "[T]here are situations where unilateral legislation can sometimes be a force for good, especially in situations where multilateral enforcement is at an impasse. … This is likely to be the case where the underlying values are uncontested and have been arrived at by consensus, clear examples being extraterritorial unilateral measures for the protection of uncontested human rights norms or the protection of the environment."

126 See e.g. Olga Martin-Ortega, Fatimazahra Dehbi, Valerie Nelson and Renginee Pillay, "Towards a Business, Human Rights and the Environment Framework", *Sustainability*, Vol. 14, No. 11, 2022, p. 4.

armed conflicts and the environment, refers to the different approaches as extraterritorial application (of international human rights law) and extraterritorial effects (of international environmental law) and notes that these complement each other.[127] It could be argued that the integration and strengthened linkages between human rights law and international environmental law, including through human rights and environmental due diligence and the right to a healthy environment, may serve as a pathway for further extraterritorial obligations. It is interesting in this context that the Advisory Opinion before the IACtHR which clearly expressed the extraterritorial scope of due diligence obligations had as its material focus the question on human rights and the environment.[128] From a genealogical perspective, some of the formative documents which have contributed to the development and understanding of the right to a healthy environment have also informed the emerging concept and application of human rights and environmental due diligence. This includes, for instance, the 2017 General Comment by the CESCR.[129]

ILC Principle 10 calls for "appropriate measures" to ensure that due diligence standards are met, and the OECD Guidance providing the inspiration for the EU CMR refers to "appropriate" due diligence measures.[130] "Appropriate measures" is also the requirement of the IACtHR 2017 Advisory Opinion, which links the due diligence standard with the right to a healthy environment. Such measures must have a specific aim (in the case of Principle 10, being aimed at ensuring due diligence) while still allowing for flexibility as regards the specific form chosen (e.g. legislative, judicial or administrative measures).[131]

In terms of the scope of the two standards, the EU CMR is more limited as it applies to EU importers of 3TG. The ILC Principles apply to all States and all businesses regardless of sector; the HRC and General Assembly resolutions recognizing the right to a healthy environment both refer to all businesses. Moreover, stakeholders "have confirmed that there is no sector of business which does not pose any potential risks to human rights or the environment".[132] The limited scope of the EU CMR is also problematic considering the demand for non-3TG minerals such as cobalt as part of the transition to renewable energy, with multiple reports of violations of human rights and environmental standards by actors in this sector in conflict-affected areas.[133]

While this tendency towards a more integrative way of viewing human rights and environmental protection is promising, it is important to recall that human rights and environmental due diligence is not a panacea to remedy

127 Anne Dienelt, *Armed Conflicts and the Environment: Complementing the Laws of Armed Conflict with Human Rights Law and International Environmental Law*, Springer, Cham, 2022, pp. 272–273.

128 IACtHR, *Medio ambiente y derechos humanos*, above note 70.

129 See e.g. D. Dam-de Jong and S. Wolters, above note 5, p. 132.

130 OECD, above note 99, p. 15.

131 UN Doc. A/77/10, above note 105, commentary to Draft Principle 10, para. 7, referring to Draft Principle 3 and the associated illustrative list of relevant measures.

132 L. Smit *et al.*, above note 15, p. 226.

133 Business and Human Rights Resource Centre, *Investing in Renewable Energy to Power a Just Transition*, Investor Guide, October 2022, pp. 5, 9.

environmental injustice or address harm to the environment and human rights, just as the right to a healthy environment is not. Whereas this article has sought to provide elements for an improved understanding of due diligence and enhanced due diligence in light of the right to a healthy environment, it will be critical to continuously improve understanding of due diligence and requirements for enhanced due diligence in the implementation of standards such as the EU CMR and the ILC Principles, and in the adoption of norms under development such as the EU Corporate Sustainability Due Diligence Directive.[134]

Conclusion

As noted above, both the HRC and General Assembly resolutions recognizing the right to a healthy environment refer to the role of businesses. In the 2018 Framework Principles developed by the UN Special Rapporteur on Human Rights and the Environment, Principle 12 states that "States should ensure the effective enforcement of their environmental standards against public and private actors", noting in the associated commentary that "States must regulate business enterprises to protect against human rights abuses resulting from environmental harm and to provide remedies for such abuses".[135]

Elements of the right to a healthy environment are present in both the EU CMR and in the OECD Guidance which provided the inspiration for that regulation, and in the ILC Principles – even to the extent that the General Assembly and HRC resolutions, as well as national and regional developments on the right to a healthy environment, are mentioned in the commentary to Draft Principle 10.[136] A number of States and international organizations also welcomed the references to the right to healthy environment in the ILC Principles and their associated commentary during the plenary discussions in the Sixth Committee of the General Assembly.[137]

In particular, the procedural dimensions of the right to a healthy environment provide a strong link to due diligence requirements.[138] In fact, and building on an argument developed by Viñuales, the degree of due diligence could be informed by the right to a healthy environment – including its substantive components – as another "relevant norm" applicable between the parties under the principle of systemic integration in the Vienna Convention on the Law of Treaties.[139] This

134 See also M. Tignino, above note 5, p. 57.

135 UN Doc. A/HRC/37/59, above note 33, Annex, para. 34. see also S. J. Turner, above note 19, p. 389.

136 UN Doc. A/77/10, above note 105, commentary to Draft Principle 10, para. 11.

137 See e.g. Micronesia in *Official Records of the General Assembly, Seventy-Seventh Session*, UN Doc. A/C.6/77/SR.24, 12 December 2022, p. 6; El Salvador in *Official Records of the General Assembly, Seventy-Seventh Session*, UN Doc. A/C.6/77/SR.21, 12 December 2022, p. 20; the EU in *Official Records of the General Assembly, Seventy-Seventh Session*, UN Doc. A/C.6/77/SR.21, 12 December 2022, p. 9; and Portugal in UN Doc. A/CN.4/749, above note 114, p. 20. International organizations also referenced the right to a healthy environment: see e.g. OHCHR, UNHCR, UNECLAC and IUCN in UN Doc. A/CN.4/749, above note 114.

138 See e.g. H. Krieger and A. Peters, above note 43, p. 363.

139 Jorge E. Viñuales, "Due Diligence in International Environmental Law", in H. Krieger, A. Peters and L. Kreuzer (eds), above note 43, pp. 120–122 (referring to a right to an environment of a certain quality).

could for instance mean that since the right to a healthy environment includes as one constitutive element access to justice in environmental matters, due diligence criteria should be developed and interpreted to ensure stronger access to remedy and ensure coherence with the right to a healthy environment more broadly.

As noted by several commentators, the right to a healthy environment remains an open and evolving norm.[140] In a similar manner, the requirements for due diligence retain a certain level of flexibility in order to remain dynamic while still meeting an appropriate level of stability and foreseeability. This balance and need for legal certainty also requires integration and coherence.[141] A more integrated understanding of human rights and the environment, as exemplified both by the right to a healthy environment and combined human rights and environmental due diligence, could also address the risk of conflicts between these areas – for instance, the risk that environmental protection measures may contribute to human rights violations, or that actions developed to safeguard human interests may harm the environment.[142] In particular, integrated due diligence and the right to a healthy environment can both contribute to a greater focus on prevention in international human rights law in addition to ensuring remedies for past harms.[143]

This article has outlined how the EU CMR and the ILC Principles are both part of a tendency towards integrated human rights and environmental due diligence. This trend speaks to a stronger emphasis on the linkages between human rights and the environment overall and provides a fertile ground for implementation of the right to a healthy environment itself. It is significant in this context that the HRC resolution recognizing the right to a healthy environment affirms that its promotion "requires the full implementation of the multilateral environmental agreements under the principles of international environmental law".[144] The integrative approach has also been emphasized by George in her analysis of the UNGPs, and by the UN Working Group on Business and Human Rights in their report focusing on coherence.[145]

Both the EU CMR and the ILC Principles open the possibility of extraterritorial application of their respective standards. This tendency is in line

140 See e.g. Rosemary Mwanza, "Framing the Normative role of the Right to a Healthy Environment: Thinking with Internormativity, Embodiment and Emergence", *Journal of Human Rights and the Environment*, Vol. 13, No. 2, 2022, p. 369.

141 UN Special Rapporteur on Human Rights and the Environment, above note 75, p. 7.

142 See e.g. Marie-Catherine Petersmann, "Conflicts between Environmental Protection and Human Rights", in J. R. May and E. Daly (eds), above note 4, 2019, pp. 297–298.

143 Elena Cima, "The Right to a Healthy Environment: Reconceptualizing Human Rights in the Face of Climate Change", *Review of European, Comparative and International Environmental Law*, Vol. 31, No. 1, 2022, p. 48.

144 HRC Res. 48/13, above note 8, para. 3.

145 Erika George, "Shareholder Activism and Stakeholder Engagement Strategies: Promoting Environmental Justice, Human Rights, and Sustainable Development Goals", *Wisconsin International Law Journal* Vol. 36, No. 2, 2019, p. 298; *Report of the Working Group on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises*, UN Doc. A/74/198, 19 July 2019, see e.g. para. 81. See also F. Dehbi and O. Martin-Ortega, above note 63. Regarding the ILC Principles, see also D. Dam-de Jong and S. Wolters, above note 5, p. 115, highlighting potential challenges and discussing "the appropriateness of the integrative approach taken by the Draft Principles with respect to international environmental and human rights law".

with the recognition of a universal human right to a healthy environment generally, as referenced above. Recent guidance developed by UNDP, UNEP and the Office of the UN High Commissioner for Human Rights (UN Human Rights) on the right to a healthy environment also states that realizing the right "requires … recognition of extraterritorial jurisdiction over human rights harms caused by environmental degradation".[146]

ILC Principle 10, the EU CMR and the normative developments regarding the right to a healthy environment can also be seen as part of the tendency of making soft law binding. For instance, the UNGPs and OECD Guidance are used as references and sources of terms for the EU CMR. The commentary to the ILC Principles also points to the OECD Guidance and the UNGPs for understanding and interpretation of due diligence requirements. The ILC commentary formulation that Draft Principle 10 has been phrased as a recommendation forms part of the Commission's mandate to codify and progressively develop international law.[147] While several States noted during their explanation of vote at the General Assembly that the resolution recognizing the right to a healthy environment in and of itself did not represent a binding commitment, the resolution nonetheless demonstrates the evolving norm as evidenced by its expression in recent treaties such as the 2018 Escazú Agreement,[148] in declarations and resolutions including at the UN Environment Assembly,[149] at the Council of Europe[150] and in constitutional provisions at the national level.

Finally, both human rights and environmental due diligence and the right to a healthy environment could be seen as part of a proceduralization of international law.[151] Specifically, a proceduralization of due diligence obligations could serve as a way to "increase legal certainty and overcome the ambiguity surrounding reasonableness".[152] This is particularly significant in situations of armed conflict, given the lack of regulatory oversight and enhanced risk of human rights violations and harm to the environment in such situations. One of the main contributions of the right to a healthy environment in this context

146 UNDP, UNEP and UN Human Rights, above note 20, p. 9.

147 UN Doc. A/77/10, above note 105, commentary to Draft Principle 10, para. 1; UNGA Res. 174(II), 21 November 1947, Art. 1. Regarding the impact of the ILC, see e.g. Laurence Boisson de Chazournes, "The International Law Commission in a Mirror – Forms, Impact and Authority", in United Nations, above note 116.

148 Escazú Agreement, above note 18, Art. 1.

149 Political Declaration of the Special Session of the United Nations Environment Assembly to Commemorate the Fiftieth Anniversary of the Establishment of the United Nations Environment Programme, UN Doc. UNEP/EA.SS.1/4, 8 March 2022.

150 Council of Europe, *Recommendation CM/Rec(2022)20 of the Committee of Ministers to Member States on Human Rights and the Protection of the Environment*, 27 September 2022.

151 J. Brunnée, above note 56, p. 140: "[T]he practical/functional linkages between procedure and substance find expression in the notion of due diligence." See also Maria Monnheimer, *Due Diligence Obligations in International Human Rights*, Cambridge University Press, Cambridge, 2020, p. 142: "Similar to the field of human rights protection, a strong emphasis on prevention has evolved in environmental law, and some inspiration might be drawn from the way in which preventive obligations have become more concrete and substantiated in light of environmental risks. The development of independent procedural obligations, in particular, could also enhance global human rights protection."

152 A. Ollino, above note 43, p. 270.

could be strengthening effective procedural rights in the area of environmental protection and bridging procedural and substantive rights.[153] It remains to be seen whether the proceduralization of international law will continue and, if so, if it can pave the way for more empowered engagement on environmental protection and human rights.[154]

While this article has sought to analyze and compare due diligence requirements in the ILC Principles and the EU CMR and suggest pathways for enhanced due diligence aligned with the right to a healthy environment, further research is needed, including on the terms "impacts" and "risks", and to better understand the development, requirements and implementation of enhanced human rights and environmental due diligence in conflict-affected contexts.[155] A greater understanding of human rights and environmental due diligence is particularly critical considering the regulations currently under development by actors such as the EU.

153 Walter F. Baber and Robert V. Bartlett, *Environmental Human Rights in Earth System Governance: Democracy beyond Democracy*, Cambridge University Press, Cambridge, 2020, p. 15: "[S]ubstantive environmental rights without complementary procedural components usually fail to protect human interests (often due to a lack of justiciability) and … procedural environmental rights (by themselves) guarantee nothing more than that ecologically disastrous decisions will be made after due process."

154 ILA Study Group, above note 15, p. 3. See also Karin Buhmann, *Power, Procedure, Participation, and Legitimacy in Global Sustainability Norms: A Theory of Collaborative Regulation*, Routledge, New York, 2018, p. 136.

155 C. Macchi, above note 47, p. 157.

International Review of the Red Cross (2023), **105** (924), 1646–1667.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000425

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The practice of the UN Security Council pertaining to the environment and armed conflict, 1945–2021

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Abstract

Contemporary ecological and climate crises have thrown into sharp relief debates around what roles and responsibilities, if any, international security bodies ought to have in addressing environment-related matters. Building on a wider catalogue of the United Nations Security Council's practice concerning the environment, in this article, we provide a snapshot of the Council's practice pertaining in particular to the environment and armed conflict. In addition to setting out key aspects relating to the personal, geographical and temporal scope of that practice, we identify four armed-conflict-related substantive themes arising in the Security Council's actions in this area: (1) relations between conflict and natural resources;

† The authors are grateful to Naz K. Modirzadeh for her assistance in conceptualizing this article.
The advice, opinions and statements contained in this article are those of the author/s and do not necessarily reflect the views of the ICRC. The ICRC does not necessarily represent or endorse the accuracy or reliability of any advice, opinion, statement or other information provided in this article.

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(2) relations between conflict and adverse environment-related phenomena; (3) relations between conflict and chemical and biological weapons; and (4) adverse impacts of conflict on the environment. Through this examination, we aim in part to provide stakeholders with a more extensive and detailed basis on which to evaluate what actions the Council has taken – and, by inference, which actions it has not taken – with respect to the environment and armed conflict.

Keywords: Security Council, United Nations, environment, climate change, armed conflict.

Introduction

War, peace and the environment have long been – and, in several significant respects, are likely to be increasingly – linked in numerous impactful ways. For example, scholars have set out links between a notion of environmental scarcity – that is, the paucity of certain natural resources – and the occurrence of conflict.[1] Resource capture by powerful groups and resultant competition over scarce resources might present opportunities for "violent collective action", which may contribute to instability and conflict.[2] Environmental degradation and biodiversity loss have similarly been linked to the possibility of violent conflict.[3] Furthermore, transnational environmental crime might serve as a source of financing for certain non-State actors implicated in conflict, including some characterized as terrorists.[4] Conflict, in turn, may adversely impact the environment, including the availability of natural resources, potentially fuelling further instability.[5] Arguably, the most prominent contemporary linkage involving war, peace and the environment may be located in the domain of climate-related concerns. Climate change and its associated effects have been described as some of "the top items on the security agenda of many states and international organizations",[6] not least the United Nations (UN). The characterization of climate change as a "threat multiplier" capable of exacerbating

1 See e.g. Thomas F. Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from Cases", *International Security*, Vol. 19, No. 1, 1994; Phillip Stalley, "Environmental Scarcity and International Conflict", *Conflict Management and Peace Science*, Vo. 20, No. 2, 2003, p. 54 ("Environmental scarcity is a security risk of considerable importance"). But see Ole Magnus Theisen, "Blood and Soil? Resource Scarcity and Internal Armed Conflict Revisited", *Journal of Peace Research*, Vol. 45, No. 6, 2008.

2 See e.g. Val Percival and Thomas Homer-Dixon, "Environmental Scarcity and Violent Conflict: The Case of South Africa", *Journal of Peace Research*, Vol. 35, 1998, pp. 286, 292–295.

3 See e.g. Lukas Rüttinger *et al.*, *The Nature of Conflict and Peace: The Links between Environment, Security and Peace and Their Importance for the United Nations*, WWF International and Adelphi Consult GmbH, 18 May 2022. See also Foreign Policy Analytics, "Environment, Fragility and Conflict", *Foreign Policy*, 12 January 2022, available at: https://foreignpolicy.com/2022/01/12/environment-fragility-and-conflict/ (all internet references were accessed in September 2023).

4 L. Rüttinger *et al.*, above note 3, p. 6.

5 *Ibid.* See also Halvard Buhaug and Nina von Uexkull, "Vicious Circles: Violence, Vulnerability, and Climate Change", *Annual Review of Environment and Resources*, Vol. 46, No. 1, 2021.

6 Michael Brzoska, "Climate Change as a Driver of Security Policy", in Jürgen Scheffran *et al.* (eds), *Climate Change, Human Security and Violent Conflict*, Springer, Berlin and Heidelberg, 2012, p. 165.

existing conflicts has bolstered such security concerns.[7] At the UN General Assembly's informal thematic debate in 2007 on "Climate Change as a Global Challenge", the representative of the Alliance of Small Island States stated that climate change was the "greatest threat facing their territorial existence".[8] At least in the eyes of certain stakeholders, those security issues, among others, may shape views on the UN Security Council's roles and responsibilities related to addressing matters pertaining to the environment.[9]

To ensure prompt and effective action by the UN, member States have conferred on the Security Council primary responsibility for the maintenance of international peace and security.[10] Broadly speaking, the Security Council addresses various country- and region-specific matters as well as certain thematic issues. The latter include children and armed conflict; protection of civilians in armed conflict; and women, peace and security.[11]

The Security Council has met to discuss climate change and security issues under such agenda items as "[m]aintenance of international peace and security",[12] "[t]hreats to international peace and security",[13] and a letter from the Permanent Representative of the United Kingdom containing an annexed concept note for an open debate on "Energy, Security and Climate".[14] The Council has addressed issues concerning natural resources under several country- and regional-specific agenda items as well as under thematic agenda items such as children and armed conflict.[15] Yet despite arguably extensive theoretical and practical linkages involving the environment and conflict,[16] none of the sixty-six matters of which the Security Council is seized as of early July 2023, including its various thematic agenda items, pertain expressly to the environment.[17] In recent years, the

7 See e.g. Hans Günter Brauch and Jürgen Scheffran, "Introduction: Climate Change, Human Security, and Violent Conflict in the Anthropocene", in J. Scheffran *et al.* (eds), above note 6, p. 6. See also United Nations, "Security Council Holds First-Ever Debate on Impact of Climate Change on Peace, Security, Hearing Over 50 Speakers", 17 April 2007, available at: https://press.un.org/en/2007/sc9000.doc.htm.

8 United Nations, "Warning against 'Gloom And Doom' Scenarios, Under-Secretary-General Says International Community Has Tools to Combat Climate Change", 1 August 2007, available at: https://press.un.org/en/2007/ga10609.doc.htm.

9 See e.g. Emyr Jones Parry, "The Greatest Threat to Global Security: Climate Change Is not Merely an Environmental Problem", *Green Our World!*, Vol. 44, No. 2, 2007.

10 Charter of the United Nations, 1 UNTS XVI, 26 June 1945 (entered into force 24 October 1945) (UN Charter), Art. 24(1).

11 See UN Security Council, *Summary Statement by the Secretary-General of Matters of which the Security Council Is Seized and of the Stage Reached in Their Consideration*, UN Doc. S/2023/10/Add.26, 3 July 2023 (UNSG Statement); Security Council, "Thematic Items", available at: www.un.org/securitycouncil/content/repertoire/thematic-items.

12 See e.g. UN Security Council, *8864th Meeting*, UN Doc. S/PV.8864, 23 September 2021; UN Security Council, *8451st Meeting*, UN Doc. S/PV.8451, 25 January 2019.

13 See e.g. UN Security Council, *9345th Meeting*, UN Doc. S/PV.9345, 13 June 2023.

14 See UN Security Council, *5663rd Meeting*, UN Doc. S/PV.5663, 17 April 2007. See also UN Security Council, "Letter Dated 5 April 2007 from the Permanent Representative of the United Kingdom of Great Britain and Northern Ireland to the United Nations Addressed to the President of the Security Council", UN Doc. S/2007/186, 5 April 2007.

15 See e.g. UN Security Council, *4207th Meeting*, UN doc. S/PV.4207, 13 October 2000; UNSC Res. 1314, 11 August 2000.

16 See above note 3.

17 UNSG Statement, above note 11.

question of whether certain environment-related issues, such as climate change and ecological crises, are matters of which the Security Council ought to be specifically seized has generated widely varying views among certain sets of States.[18] The rejection on 13 December 2021 by the Security Council of a draft resolution concerning climate-related security risks – with Russia and India voting against, and China abstaining – is arguably the most prominent recent example of such contestation.[19]

From the present authors' perspective, a precondition for sound lawmaking and policy-making – in this and other areas – is access to reliable information. Further, the production and distribution of facts, not least on matters of international public concern, can provide a bulwark against misinformation and disinformation. However, access to evidence and knowledge with respect to the practice of the Security Council varies widely, perhaps especially among States.[20] That disparate access has arisen despite the fact that, in the UN Charter, member States have agreed both that, in discharging its primary responsibility for the maintenance of international peace and security, the Security Council acts on their behalf[21] and that member States shall accept and carry out the Council's decisions in accordance with the Charter.[22]

In this article, we attempt to help contextualize and inform debates on the roles and responsibilities of the UN Security Council pertaining to the environment and armed conflict by outlining relevant Council practice. We aim in part to provide stakeholders with a more extensive and detailed basis on which to evaluate what actions the Council has taken – and, by inference, which actions it has not taken – with respect to the environment and armed conflict.[23] We draw on a catalogue of the practice of the Security Council concerning the environment from 1945 to 2021 (the Catalogue) that we edited for the Harvard Law School Program on International Law and Armed Conflict (HLS PILAC) and that was

18 UN Security Council, *The UN Security Council and Climate Change: Tracking the Agenda after the 2021 Veto*, Research Report, 30 December 2022.

19 See UN Security Council, *8926th Meeting*, UN Doc. S/PV.8926, 13 December 2021. The draft resolution is contained in Security Council, *Afghanistan, Albania, … Uruguay and Vanuatu: Draft Resolution*, UN Doc. S/2021/990, 13 December 2021.

20 Recent efforts to collate, organize and make freely accessible at least some areas of Security Council practice and procedures include, among others, UN Security Council, *The UN Security Council and Climate Change*, Research Report, 21 June 2021, pp. 21–26; United Nations, *Interactive Handbook of the Working Methods of the Security Council*, available at: www.un.org/securitycouncil/content/interactive-handbook; Will Ossoff, Naz K. Modirzadeh and Dustin A. Lewis, *Preparing for a Twenty-Four-Month Sprint: A Primer for Prospective and New Elected Members of the United Nations Security Council*, Harvard Law School Program on International Law and Armed Conflict (HLS PILAC), December 2020, available at: https://pilac.law.harvard.edu/primer-for-elected-members.

21 UN Charter, above note 10, Art. 24(1).

22 *Ibid.*, Art. 25.

23 For a selection of Security Council language concerning, in particular, climate change and natural resources, see e.g. UN Security Council, above note 20, pp. 21–26; Peter Aldinger, Carl Bruch and Sofia Yazykova, "Revisiting Securitization: An Empirical Analysis of Environment and Natural Resource Provisions in United Nations Security Council Resolutions, 1946–2016", in Ashok Swain and Joakim Öjendal (eds), *Routledge Handbook of Environmental Conflict and Peacebuilding*, 1st ed., Routledge, London, 2018.

published in April 2023.[24] We proceed as follows. First, we briefly explain the impetus and objectives that drove this undertaking. Second, we set out the sources and methods that we used in creating the Catalogue. Third, we outline, in broad-brush strokes, the Security Council's practice concerning the environment in general as documented in the Catalogue. In much of that practice, the Council identified extensive linkages with conflict.[25] Fourth, we attempt to summarize the Council's practice pertaining to the environment and armed conflict. To do so, we first describe the definitional parameters that we use for the term "environment and armed conflict" and we then sketch Council practice across its material, personal, geographical and temporal dimensions. Finally, we briefly conclude with a call for more knowledge resources to help better inform stakeholders debating the roles and responsibilities of various bodies and institutions in addressing contemporary climate and ecological crises, not least as those crises pertain to peace and armed conflict.

Impetus and objectives

For at least a decade, the Security Council's involvement in addressing issues related to the environment – particularly as it pertains to the current ecological and climate crises – has been subject to contestation among certain sets of States. According to one perspective, the urgency and magnitude of the security implications associated with those issues highlight a need for the Council to assume a more robust, systematic and coherent role in this area.[26] On that view, the consequences of environmental matters "reach the very heart of the security agenda", necessitating the involvement of the Council in its capacity as the organ vested with primary responsibility for maintaining international peace and security.[27] A countervailing line of reasoning argues that a subsumption of environment-related matters within the framework of international security is potentially problematic and instead frames the environment as primarily a sustainable-development concern.[28] Under this approach, a "devol[ution] [of] responsibilities of a humanitarian or developmental nature" to security institutions may warrant concern.[29] The Council's limited size – with five permanent members and ten elected members – as compared to the more widely representative General Assembly may also be a relevant factor in shaping States' views on this issue. At one debate on climate change, for example, China's representative highlighted

24 Radhika Kapoor and Dustin A. Lewis, *HLS PILAC Catalogue of Practice of the U.N. Security Council Concerning the Environment, 1945–2021, with an Accompanying Finding Aid*, HLS PILAC, April 2023 (Catalogue and Finding Aid), available at: https://pilac.law.harvard.edu/unsc-practice-concerning-the-environment.

25 See the below section on "Material Scope".

26 See e.g. UN Security Council, above note 18, p. 3; UN Security Council, *9345th Meeting*, UN Doc. S/PV.9345, 13 June 2023.

27 UN Security Council, *5663rd Meeting*, UN Doc. S/PV.5663, 17 April 2007, p. 18.

28 UN Security Council, above note 18, p. 3.

29 See e.g. Corinne Schoch, *Rethinking Climate Change as a Security Threat*, Sustainable Development Opinion Paper, International Institute for Environment and Development, October 2011, p. 2.

that the Council did not allow for the kind of extensive participation that might result in "widely acceptable proposals".[30] Similarly, India's representative has asserted that the Council would be an inappropriate forum for addressing climate change, instead highlighting the UN Framework Convention on Climate Change, to which 198 States are party.[31]

Stepping back, the contemporary scholarly and policy focus on the Security Council's potential "climatization" might risk obscuring significant aspects of the Council's arguably expansive practice, since at least 1947, pertaining to additional issues related to the environment.[32] Through the Catalogue and its accompanying Finding Aid, we have sought to develop a resource that systematically collects, organizes, and makes publicly and freely available the practice of the Security Council concerning the environment, including but not limited to the current ecological and climate crises. In so doing, we did not seek to adopt normative positions on the (il)legitimacy or (un)desirability of the Security Council's involvement in addressing the environment or to critique or endorse extant approaches adopted by the Council or UN member States in this connection. Rather, we have sought to help contribute to an evidentiary and analytical basis for ascertaining and appraising what the Council has done and has not done in this area.

Sources and methods

At the outset, it bears emphasis that, while we consulted specialists in environmental science in the development of the Catalogue, neither the Catalogue nor its accompanying Finding Aid purport to reflect advanced technical knowledge of that field. In addition, two other aspects of the sources and methods that we developed in producing the Catalogue warrant mention. The first concerns the definition that we used of the term "environment", and the second concerns the process that we used for including or excluding specific Security Council texts from the Catalogue.

First, despite a proliferation of domestic and multilateral instruments and customary rules concerning the environment, we did not discern from those sources a single, authoritative definition of the term "environment" that we considered suitable for the project.[33] In that absence, we relied primarily on relevant international legal sources,[34] secondarily on regional and domestic legal

30 United Nations, above note 7.
31 Security Council, *8864th Meeting*, UN Doc. S/PV.8864, 23 September 2021.
32 See e.g. UNSC Res. 21, 2 April 1947, Art. 6. See, further, Catalogue and Finding Aid, above note 24.
33 See, further, Catalogue and Finding Aid, above note 24, pp. 5–6.
34 See e.g. UN Framework Convention on Climate Change, 1771 UNTS 107 (entered into force 21 March 1994); Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration), 16 June 1972; *Report of the United Nations Conference on Environment and Development: Annex I: Rio Declaration on Environment and Development*, UN Doc. A/CONF.151/26 (Vol. I), 12 August 1992; Convention on the Prohibition of Military or Any Other Hostile Uses of Environmental Modification Techniques, 1108 UNTS 151 (entered into force 5 October 1978); *Glossary of Environment Statistics*, UN Doc. ST_ESA_STAT_SER.F_67, 1997; UN Environment Programme, *From Conflict to Peacebuilding: The Role of Natural Resources and the Environment*, 2009, available at:

sources,[35] and subsidiarily on relevant scholarly and policy literature[36] to develop a definition of the term "environment" for the project. That definition then served as the basis for determining whether a specific Security Council text was included in the Catalogue. In reviewing those sources and determining the definitional parameters of the term "environment", we were required to make several arguably subjective decisions.[37] Even slight substantive differences in those parameters may (and likely would) have produced a substantively different catalogue of Security Council practice. The definition we developed is reproduced below:

> The definitional scope of the term "environment" may be understood as the complex of physical, chemical, and biotic factors that constitute the natural world. As such, the environment includes the earth and its climate, biosphere, cryosphere, lithosphere, hydrosphere, atmosphere, and outer space, encompassing – and, as applicable, along with – the natural resources of the earth, such as air, water, land, flora and fauna, bio-diversity, and all renewable and non-renewable sources of energy, and incorporating the interrelations between any of these systems or elements.
>
> The scope of the term "environment," for the purposes of this project, is limited to elements and systems of the natural world. However, this notion of the environment includes human modifications to the natural environment to the extent that the modified element or system shares dominant ecological characteristics comparable to its natural counterpart and can sustain itself after human intervention has ceased.[38]

Second, to identify relevant Security Council practice, the research team[39] initially reviewed all resolutions and presidential statements adopted by the Council from its founding in late 1945 through the end of 2021[40] and assessed whether those texts materially addressed a salient aspect of the environment. To determine

https://wedocs.unep.org/handle/20.500.11822/7867; Independent Expert Panel for the Legal Definition of Ecocide, *Commentary and Core Text*, June 2021; UN Environment Programme, *Environmental and Social Sustainability Framework*, 2020, p. 8, available at www.unep.org/resources/report/un-environments-environmental-social-and-economic-sustainability-framework; Convention on Biological Diversity, 1760 UNTS 79 (entered into force 29 December 1993).

35 See e.g. Laos, Environmental Protection Law (Revised Version), 2013, Art. 2; Australia, Environment Protection and Biodiversity Conservation Act, 1999, Section 528; Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, 2161 UNTS 447 (entered into force 30 October 2001).

36 See e.g. Andrew Brennan and Norva Yeuk-Sze Lo, *Understanding Environmental Philosophy*, 1st ed., Routledge, London, 2010; Marie-Louise Larsson, *Legal Definitions of the Environment and of Environmental Damage*, Scandinavian Studies in Law, Stockholm Institute for Scandinavian Law, 1999.

37 See e.g. Catalogue and Finding Aid, above note 24, pp. 7–9.

38 *Ibid.*, p. 9.

39 The following HLS PILAC research assistants contributed to the Catalogue: Aizhan Tilenbaeva, Ryen Bani-Hashemi, Nanami Hirata, Audrey MacKay, Ana Leticia Magini, Anum Mesiya, Shriya Nayyar and Juan Felipe Wills Romero. The following HLS PILAC research assistants contributed research support with respect to the Finding Aid: Sandy Alkoutami, Eoin Jackson, Jacqulyn Kantack, Ana Leticia Magini, Isa Rama, Zoe Shamis and Yen Ba Vu.

40 The Catalogue spans the period starting with the formation of the Council in late 1945 through to 31 December 2021.

whether those texts warranted inclusion in the Catalogue, at least one of the present authors then reviewed all texts provisionally nominated by the research team.[41]

Catalogue parameters

The Catalogue contains the following fields:

- the chronological order, date and UN-assigned symbol of the document;
- an indication as to whether the document was a resolution or presidential statement;
- the subject-matter-related aspects of the document's title as set out in the UN Digital Library;
- the primary environment-related theme(s) of the document, as well as the associated environment-related aspects of the document's context, as formulated by us;
- the relevant excerpt;
- a URL to an English text of the document; and
- an indication as to whether or not the document was expressly adopted under Chapter VI or VII of the UN Charter.

Security Council practice concerning the environment in general: A brief overview

The material scope of Security Council practice concerning the environment from 1945 to 2021 has spanned a diverse array of subjects, including:

- the protection,[42] management[43] and exploitation[44] of natural resources;
- conduct related to biological and chemical weapons;[45]
- adverse environment-related phenomena and associated effects;[46]
- impacts of armed conflict on the environment;[47]
- impacts of the activities of UN entities on the environment;[48]
- the inclusion of environmental issues in wider policies or approaches;[49]
- environmentally friendly practices regarding disposal or other processes concerning waste management;[50] and

41 See, further, Catalogue and Finding Aid, above note 24, p. 10.
42 See e.g. UNSC Res. 2127, 5 December 2013, para. 16; UNSC Res. 810, 8 March 1993, para. 16.
43 See e.g. UNSC Res. 2190, 15 December 2014, para. 2; UNSC Res. 2188, 9 December 2014, Preamble.
44 See e.g. UNSC Res. 2612, 20 December 2021, para. 3; UNSC Res. 2611, 17 December 2021, Preamble.
45 See e.g. UNSC Res. 2325, 15 December 2016, para. 14; UNSC Res. 2298, 22 July 2016, para. 1. See also below notes 129–132 and corresponding text.
46 See e.g. UNSC Res. 2502, 19 December 2019, Preamble; UNSC Res. 2476, 25 June 2019, Preamble.
47 See e.g. UNSC Res. 2417, 24 May 2018, Preamble; UNSC Res. 571, 20 September 1985, Preamble.
48 See e.g. UNSC Res. 2113, 30 July 2013, para. 28; UNSC Res. 2100, 25 April 2013, para. 32.
49 See e.g. UNSC Res. 2119, 10 October 2013, Preamble.
50 See e.g. UNSC Res. 2231, 20 July 2015, JCPOA, Annex III: "Civil Nuclear Cooperation", para. 13; UNSC Res. 1929, 9 June 2010, Annex IV.

- liability in connection with causing environmental damage.[51]

In terms of personal scope, while the principal addressees of Security Council decisions are typically UN member States, relevant Security Council practice on the above-mentioned matters addressed or otherwise referred to a wide range of actors in addition to member States. That set of actors included:

- governments, such as the government of the Democratic Republic of the Congo (DRC) in connection with addressing the illicit exploitation of natural resources;[52]
- other national-level entities, such as Libya's National Oil Corporation in connection with maintaining control over oil resources;[53]
- peoples of particular States, such as the people of Iraq with respect to controlling their own natural resources;[54]
- parties to certain agreements or conflicts, such as parties to the Comprehensive Peace Agreement in Sudan in connection with reaching agreement over natural-resource management, and parties to the conflict in the DRC in connection with cooperating with a group of experts on the illegal exploitation of natural resources and other forms of wealth in that State;[55]
- international or regional organizations or communities or entities associated therewith, such as a fact-finding mission linked with the Organization for the Prohibition of Chemical Weapons investigating the use of toxic chemicals in Syria;[56]
- international financial institutions, including in connection with working with the government of the DRC to establish a plan for effective and transparent control over exploitation of natural resources;[57]
- companies, such as those involved in trading in rough diamonds in connection with making declarations not to trade in diamonds originating from certain conflict zones, including Sierra Leone;[58]
- industries, including processing industries dealing with mineral products in the DRC, in connection with exercising due diligence with respect to mineral suppliers and the origin of the minerals;[59] and
- combinations of various types of such actors.[60]

Geographically, the Council's practice concerning the environment covered, unevenly, most regional groups as classified by the UN's informal regional grouping.[61] Notably, however, much of the practice was focused on African States and, to a lesser extent,

51 See e.g. UNSC Res. 692, 20 May 1991, Preamble; UNSC Res. 687, 3 April 1991, para. 16.
52 See e.g. UNSC Res. 2360, 21 June 2017, para. 19.
53 See e.g. UNSC Res. 2510, 12 February 2020, Preamble.
54 See e.g. UNSC Res. 1637, 11 November 2005, Preamble; UNSC Res. 1546, 8 June 2004, preambular para. 3.
55 See e.g. UN Doc. S/PRST/ 2011/3, 9 February 2011, pp. 1–2; UNSC Res. 1493, 28 July 2003, para. 28.
56 See e.g. UNSC Res. 2209, 6 March 2015, Preamble.
57 See e.g. UNSC Res. 1856, 22 December 2008, para. 21.
58 See e.g. UNSC Res. 1306, 5 July 2000, para. 13.
59 See e.g. UNSC Res. 1896, 7 December 2009, para. 14.
60 See e.g. UNSC Res. 687, 3 April 1991, para. 16.
61 United Nations, "Regional Groups of Member States", UN Department for General Assembly and Conference Management, available at: www.un.org/dgacm/en/content/regional-groups.

Asia-Pacific States.[62] Indeed, the Council's extensive relative focus on States in Africa was especially evident, with a large number of salient provisions of resolutions and presidential statements referring specifically to three African States: the DRC, Liberia or Somalia.[63] Security Council practice concerning Asia-Pacific States was comparatively less sizable but nevertheless exceeded practice concerning other regional groups (aside from Africa). In many of those relevant decisions and presidential statements pertaining to Asia-Pacific States, the Council referred to one of the following States: Afghanistan, Syria or Iraq.[64]

In its practice concerning the environment, the Security Council has made only a handful of express temporal references. Those that the Council did make arose in connection with:

- periods during which certain measures were applicable or operational, such as the renewal, until a specific date, of measures preventing the importation by any State of rough diamonds from Côte d'Ivoire;[65]
- periods concerning environmental clean-ups, namely an estimate that an environmental clean-up in the wake of the termination of the mandate of the African Union–United Nations Hybrid Operation in Darfur would take six months;[66]
- periods related to forecasting the effects of environmental degradation, namely that the possible adverse effects of such deterioration may, "in the long run", aggravate existing threats to the stability of certain vulnerable States;[67] and
- periods pertaining to satisfying liability for environment-related damages, such as the reference, in a resolution on lifting certain economic sanctions on Iraq, to the non-applicability of privileges and immunities with respect to a legal proceeding in which recourse to certain proceeds or obligations is necessary to satisfy liability for damages assessed in connection with an ecological accident, including an oil spill, that occurs after the Council adopted the resolution.[68]

Security Council practice pertaining to the environment and armed conflict

Definitional parameters

As noted above, the Security Council does not have a thematic area of work dedicated specifically to "the environment and armed conflict".[69] As such, our

62 See Catalogue and Finding Aid, above note 24, pp. 78–83.
63 See *ibid.*, pp. 78–81.
64 See *ibid.*, pp. 81–82. The classification of Afghanistan, Syria and Iraq as part of the Asia-Pacific region is based on the UN's informal regional grouping: see above note 61 and associated main text.
65 See e.g. UNSC Res. 2045, 26 April 2012, para. 6; UNSC Res. 1893, 29 October 2009, para. 1.
66 See e.g. UNSC Res. 2559, 22 December 2020, Preamble.
67 See e.g. UNSC Res. 2518, 30 March 2020, Preamble.
68 See e.g. UNSC Res. 1483, 22 May 2003, para. 22.
69 See the main text in the Introduction at above notes 17–18.

summarization of the Council's actions seeks to categorize, organize and systematize a diverse set of practices that has spanned multiple agenda items, both thematic and region- or country-specific. To ascertain the scope of Security Council practice pertaining to the environment and armed conflict, we deemed it necessary as a threshold matter to determine the parameters of the term "environment and armed conflict". For "environment", we used the definition developed for the purposes of the Catalogue;[70] "armed conflict", for its part, is a concept set out in international law, and we relied on a range of sources to ascertain what situations may fall under that heading.[71] For the purposes of this article, we considered any Security Council practice containing references to the environment[72] arising in connection with armed conflict – including the causation, occurrence, perpetuation or termination of armed conflict – as constituting the Council's practice pertaining to the environment and armed conflict. In doing so, we made subjective determinations to ascertain whether an instance of Security Council practice included in the Catalogue bore a sufficiently salient linkage to armed conflict.

For example, in determining whether a particular text bore a sufficiently salient link to "armed conflict", we did not deem it necessary that the Security Council explicitly used the term "armed conflict". Rather, we considered references to "conflict over" an element or system of the environment, for example, to suffice.[73] We also included other references that we assessed as sufficiently conflict-related, such as the continuation of "hostilities",[74] the protection of civilians[75] and the use of toxic chemicals as weapons.[76] Similarly, we included references to "inter-communal conflicts" related to natural resources.[77]

70 See the definition of the term "environment" in the above section on "Sources and Methods".

71 Among others: Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of 12 August 1949, 75 UNTS 31 (entered into force 21 October 1950), Arts 2, 3; Geneva Convention (II) for the Amelioration of the Condition of the Wounded, Sick and Shipwrecked Members of the Armed Forces at Sea of 12 August 1949, 75 UNTS 85 (entered into force 21 October 1950), Arts 2, 3; Geneva Convention (III) relative to the Treatment of Prisoners of War of 12 August 1949, 75 UNTS 135 (entered into force 21 October 1950), Arts 2, 3; Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War of 12 August 1949, 75 UNTS 287 (entered into force 21 October 1950), Arts 2, 3; Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978), Art. 1; Protocol Additional (II) to the Geneva Conventions of 12 August 1949 and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978), Art. 1; International Criminal Tribunal for the former Yugoslavia, *Prosecutor v. Duško Tadić*, Case No. IT-94-1, Decision on the Defence Motion for Interlocutory Appeal on Jurisdiction (Appeals Chamber), 2 October 1995, para. 70.

72 Throughout this article, any reference to the "environment" may be understood as encompassing any elements or systems of the environment that fall within the purview of the definition of "environment" developed for the purpose of the Catalogue. We relied on the Catalogue as the primary resource for Security Council practice referring to the environment. See the definition of the term "environment" in the above section on "Sources and Methods".

73 See e.g. UN Doc. S/PRST/2018/18, 21 September 2018, p. 86; UNSC Res. 2333, 23 December 2016, Preamble.

74 See e.g. UNSC Res. 1493, 28 July 2003, para. 28.

75 See e.g. UN Doc. S/PRST/2003/27, 15 December 2003, pp. 11–12.

76 See e.g. UNSC Res. 2235, 7 August 2015, paras 5, 8; UNSC Res. 2209, 6 March 2015, Preamble.

77 See e.g. UNSC Res. 2429, 13 July 2018, Preamble; UNSC Res. 2363, 29 June 2017, Preamble.

On the rationale that the absence of conflict may be considered a minimum precondition for the maintenance of peace, stability and security,[78] we considered references to the environment in connection with maintaining or achieving peace, stability and security[79] to be sufficiently conflict-related. On the basis that certain individuals or entities characterized as "terrorists" may be involved in an armed conflict, we also included references to the environment in connection with "terrorism" or "terrorist activities". For example, at the time of writing, armed conflicts in parts of Iraq, Mali, Nigeria, Somalia, Syria and Yemen (among others) may involve entities characterized as terrorists.[80] Along similar lines, we also included references to the environment in connection with "armed groups".

Among the examples of practice that we excluded for not being sufficiently conflict-related were references to the possible endangerment of marine life[81] or to risks of malnutrition caused by drought.[82] Nor did we consider the Security Council's extensive practice on sovereignty and ownership over natural resources, in itself, as part of the Council's practice concerning the environment and armed conflict as such.[83] On the other hand, we did consider practice referencing linkages between natural resources, armed conflict and post-conflict situations[84] to be germane.

In view of the subjective nature of many of the above-mentioned determinations, it may be noted that a different approach might have yielded a different collection of Security Council practices pertaining to the environment and armed conflict.[85] A wider approach, for example, might have posited that, by its nature, every entry in the Catalogue pertains to armed conflict on the rationale that any substantive reference by the UN organ vested with primary responsibility for maintaining international peace and security relates in at least some sense to the prospect of preventing or ending conflict.[86]

78 See Anne Peters, "Ch. V The Security Council: Functions and Powers: Article 24", in Bruno Simma *et al.* (eds), *The Charter of the United Nations: A Commentary*, Oxford University Press, Oxford, 2012, para. 34.

79 See e.g. UNSC Res. 2079, 12 December 2012, para. 5(d).

80 See e.g. Institute for Economics and Peace, *Global Terrorism Index 2023: Measuring the Impact of Terrorism*, March 2023, available at: www.economicsandpeace.org/wp-content/uploads/2023/03/GTI-2023-web.pdf; Geneva Academy, "Non-International Armed Conflicts in Iraq", *RULAC*, available at: www.rulac.org/browse/conflicts/non-international-armed-conflicts-in-iraq; Annyssa Bellal, *The War Report: Armed Conflicts in 2018*, Geneva Academy, April 2019; Dustin A. Lewis, Naz K. Modirzadeh and Jessica S. Burniske, *CTED and IHL: Preliminary Considerations for States*, HLS PILAC, March 2020, pp. 29–30.

81 See e.g. UNSC Res. 540, 31 October 1983, para. 5.

82 See e.g. UNSC Res. 2014, 21 October 2011, Preamble.

83 See e.g. UNSC Res. 2608, 3 December 2021, Preamble; UNSC Res. 2554, 4 December 2020, Preamble.

84 See e.g. UN Doc. S/PRST/2007/22, 25 June 2007, p. 1.

85 The determinations made throughout this article purport only to provide a snapshot of Security Council practice concerning the environment and armed conflict; they do not purport to constitute legal assessments, including with respect to the existence (or not) of an armed conflict as defined in international law in a particular context.

86 On the Security Council's conflict-prevention responsibilities, see also UN Charter, above note 10, Arts 34, 36(1), 37(2), 1(1) (referring to "collective measures for the prevention and removal of threats to the peace"). See, further, e.g., UN Secretary-General, *An Agenda for Peace: Preventive Diplomacy, Peacemaking and Peace-keeping*, UN Doc. S/24111, 17 June 1992, p. 203 (on identifying "at the earliest possible stage situations that could produce conflict" and addressing them using preventive diplomacy); Paul Romita, *The UN Security Council and Conflict Prevention: A Primer*, International Peace Institute, 2011, p. 4.

Material scope

With respect to material scope, the Security Council has drawn a range of armed-conflict-related linkages in its practice concerning the environment.[87] In short, those linkages ranged from the prevention of armed conflict to its causation, perpetuation and impacts on the environment.[88] From our perspective, the material scope of the Security Council's practice pertaining to the environment and armed conflict may be conceptualized as spanning the following four themes:

1. relations between conflict and natural resources, including the illicit exploitation of such resources;[89]
2. relations between conflict and adverse environment-related phenomena;[90]
3. relations between conflict and chemical and biological weapons;[91] and
4. adverse impacts of conflict on the environment.

Relations between armed conflict and natural resources

In terms of volume, armed-conflict-related linkages concerning natural resources far exceed those under the other three material themes. The following notions, many of which may overlap, arose in this substantive area:

- **Natural resources, or their management or illicit exploitation, as actual or potential causes of conflict.** For example, with respect to Sudan, the Council has referred to the "management" of specific natural resources, such as land and water, as one of the root causes of conflict.[92] Further, the Council has

87 We use the term "conflict-related linkages" here as a shorthand to encompass references in Security Council practice to elements or systems of the environment arising in connection with conflict.

88 See the below sections on "Relations between Armed Conflict and Natural Resources", "Relations between Armed Conflict and Environment-Related Phenomena", "Relations between Armed Conflict and Chemical or Biological Weapons" and "Adverse Impacts of Armed Conflict".

89 Throughout this article, we use the term "illicit" in connection with exploitation of natural resources to refer to all forms of illegal, illegitimate, unauthorized, banned or otherwise condemned use or exploitation of or trade in natural resources, including smuggling of or trafficking in natural resources. See, further, Catalogue and Finding Aid, above note 24, p. 25.

90 In its practice concerning the environment, the Security Council refers to or otherwise addresses a range of forms or factors pertaining to adverse environment-related phenomena, including climate change, floods, droughts, environmental degradation, ecological changes, desertification, land degradation, energy poverty or energy access, increasingly frequent and extreme weather phenomena, lack of rainfall, forest fires, erratic precipitation, volcanic eruptions, earthquakes, hurricanes, severe weather events and natural disasters, and locust upsurges or infestations – or a combination of such forms or factors. See e.g. UNSC Res. 2612, 20 December 2021, Preamble; UNSC Res. 2607, 15 November 2021, Preamble; UNSC Res. 2605, 12 November 2021, Preamble. The term "environment-related phenomena" is employed both in this article as well as in the Catalogue and Finding Aid to encompass each of these forms or factors as well as any combination of them. See, further, Catalogue and Finding Aid, above note 24, pp. 40–41.

91 With respect to the inclusion of "chemical weapons" within the scope of the term "environment", see below notes 129–130; Catalogue and Finding Aid, above note 24, p. 10.

92 See e.g. UNSC Res. 2363, 29 June 2017, Preamble; UNSC Res. 2429, 13 July 2018, Preamble.

characterized the notion of illicit exploitation[93] of natural resources as contributing to the outbreak of armed conflict.[94] Particularly with respect to certain States, including the DRC and the Central African Republic (CAR), the Council has described the illicit exploitation of natural resources as a cause of conflict.[95] Certain other references by the Council – including those to conflicts over natural resources in Sudan,[96] to the potential for conflict over natural resources in certain States, such as Liberia,[97] and to the possibility of specific resources, such as petroleum, acting as "driver[s]" of conflict in Somalia[98] – may also be conceived as falling under this sub-theme.

- **Risks of destabilization or other threats to peace and security from illicit exploitation of natural resources.** For example, the Council has drawn linkages with illicit exploitation of natural resources and risks of destabilization in certain States, such as Somalia and the DRC.[99] Relatedly, the Council has identified threats or other forms of endangerment to peace, stability or security in connection with illicit exploitation of natural resources in certain States, such as Libya and the CAR, as well as in certain (additional) parts of Africa.[100]
- **Risks to peace, stability or security from those involved in the illicit exploitation of natural resources.** For example, the Council has characterized certain non-State actors involved in the illicit exploitation of natural resources as posing risks to the security and stability of certain States, such as Afghanistan.[101]
- **Illicit exploitation of natural resources with respect to the perpetuation, fuelling or continuation of conflict.** The Council has drawn linkages between illicit exploitation of natural resources and risks of escalation, perpetuation or fuelling of conflict, including in Africa and particularly in the CAR.[102] In the context of the DRC, the Council has referred to the financing of conflict through the exploitation of natural resources[103] and the link between the continuation of hostilities and illicit exploitation of natural resources.[104] In the respective contexts of certain States, such as Liberia and

93 See above note 89.
94 See e.g. UNSC Res. 1625, 14 September 2005, Annex, para. 6; UN Doc. S/PRST/2007/22, 25 June 2007, p. 1.
95 See e.g. UNSC Res. 2605, 12 November 2021, Preamble; UNSC Res. 2556, 18 December 2020, para. 14; UNSC Res. 2502, 19 December 2019, para. 14.
96 See e.g. UNSC Res. 2429, 13 July 2018, Preamble; UNSC Res. 2363, 29 June 2017, Preamble.
97 See e.g. UN Doc. S/PRST/2018/18, 21 September 2018, p. 86; UNSC Res. 2333, 23 December 2016, Preamble; UNSC Res. 2308, 14 September 2016, Preamble.
98 See e.g. UNSC Res. 2444, 14 November 2018, para. 40; UNSC Res. 2385, 14 November 2017, para. 24.
99 See e.g. UNSC Res. 2608, 3 December 2021, Preamble; UN Doc. S/PRST/2021/19, 20 October 2021, p. 4.
100 See e.g. UNSC Res. 2571, 16 April 2021, Preamble; UNSC Res. 2605, 12 November 2021, Preamble; UN Doc. S/PRST/2021/21, 28 October 2021, p. 2.
101 See e.g. UNSC Res. 2611, 17 December 2021, Preamble; UNSC Res. 2557, 18 December 2020, Preamble.
102 See e.g. UNSC Res. 2457, 27 February 2019, Preamble; UN Doc. S/PRST/2015/3, 19 January 2015, p. 3; UNSC Res. 2127, 5 December 2013, preambular para. 16.
103 See e.g. UNSC Res. 1376, 9 November 2001, para. 8.
104 See e.g. UNSC Res. 1493, 28 July 2003, para. 28.

Sierra Leone, the Council has identified the illicit diamond trade, in particular, as fuelling conflict.[105] Further, the Council has identified the following types of "linkages" with illicit exploitation of natural resources as factors that may "prolong armed conflict": linkages between illicit trade in natural resources and armed conflict;[106] linkages between illicit trade in natural resources, illicit trafficking in small arms and light weapons, cross-border abduction and recruitment, and armed conflict;[107] and linkages between illicit trade in precious minerals, illicit trafficking in small arms and light weapons, other criminal activities, armed conflict, and terrorism.[108] The Council's recognition of illicit exploitation of natural resources as a factor potentially enabling armed groups to operate in certain States, such as the DRC, may also be conceived as falling under this sub-theme.[109]

- **Other linkages between natural resources and the trade in weapons.** The Council has referred to a linkage, "in the context of … conflict", between the illicit exploitation of natural resources and trafficking or trade in certain weapons.[110]
- **Financing of or other benefits to armed groups through illicit exploitation of natural resources.** The Council has identified a series of linkages between illicit exploitation of natural resources and the financing of certain armed groups. Those references include, for instance, linkages between illicit trafficking in wildlife and natural resources and the financing of certain armed groups, such as the Lord's Resistance Army and Boko Haram,[111] as well as linkages between illicit fishing and Al-Shabaab's ability to generate revenue in Somalia.[112] The Security Council has also identified "benefits" from the illicit exploitation of natural resources to some of those whom it has characterized as terrorists.[113] In respect of certain States, such as Afghanistan and Libya, the Council has characterized illicit exploitation of natural resources as a form of "support" to certain sanctioned entities or armed groups. For example, with respect to Libya, the Council has referred to the provision of "support for armed groups or criminal networks through the illicit exploitation of … natural resources".[114] With respect to Afghanistan, the Council has recognized that means of financing or supporting certain sanctioned individuals and entities may include proceeds derived from the illicit exploitation of natural resources.[115] Relatedly, the Council has

105 See e.g. UNSC Res. 1478, 6 May 2003, Preamble; UNSC Res. 1446, 4 December 2002, Preamble; UNSC Res. 1343, 7 March 2001, Preamble.
106 See e.g. UNSC Res. 1314, 11 August 2000, para. 8.
107 See e.g. UNSC Res. 1539, 22 April 2004, para. 3.
108 See e.g. UNSC Res. 1379, 20 November 2001, para. 6.
109 UNSC Res. 2582, 29 June 2021, Preamble; UNSC Res. 2528, 25 June 2020, Preamble.
110 See e.g. UNSC Res. 1533, 12 March 2004, Preamble; UNSC Res. 1499, 13 August 2003, Preamble.
111 See e.g. UN Doc. S/PRST/2018/17, 10 August 2018, p. 4; UN Doc. S/PRST/2015/12, 11 June 2015, p. 5.
112 UNSC Res. 2607, 15 November 2021, Preamble; UNSC Res. 2551, 12 November 2020, Preamble.
113 See e.g. UNSC Res. 2610, 17 December 2021, Preamble; UNSC Res. 2482, 19 July 2019, Preamble; UNSC Res. 2322, 12 December 2016, Preamble.
114 UNSC Res. 2571, 16 April 2021, Preamble.
115 UNSC Res. 2255, 22 December 2015, para. 4; UNSC Res. 2210, 16 March 2015, para. 15.

characterized the provision of support to armed groups or criminal networks through illicit exploitation of natural resources as a designation criterion under sanctions regimes applicable in relation to, respectively, the CAR and the DRC.[116] The Council has also referred to other potential benefits aside from financing or fundraising; for instance, in respect of Liberia, the Council has identified a linkage between the illicit trade in diamonds and the supply of weapons, fuel or other prohibited materiel to rebel movements.[117]

- **Impacts of illicit exploitation of natural resources on the protection of civilians.** The Council has drawn a number of linkages with illicit exploitation of natural resources that concern, in at least some sense, aspects relevant to the protection of civilians. For example, the Council has recognized a linkage between illicit trade in minerals and conflict-related sexual violence.[118] The Council has also referred to potential impacts of illicit exploitation of natural resources on the protection of (certain) civilians,[119] including by characterizing illicit trade in natural resources as one of several cross-border activities "deleterious to children in … armed conflict".[120]
- **Impacts of illicit exploitation of natural resources on conflict prevention.** The Security Council has recognized negative impacts of illicit exploitation of natural resources on "conflict prevention, post-conflict peacebuilding [and] the consolidation of peace".[121]
- **Exploitation or management of natural resources in connection with sustainable peace and security.** With respect to certain States, such as Liberia and the DRC, the Security Council has recognized transparent and effective management of natural resources as critical for sustainable peace and security.[122] The Council has also referred to lawful, transparent and sustainable management and exploitation of natural resources as critical for maintaining stability and preventing a relapse into conflict.[123]

Relations between armed conflict and environment-related phenomena

In Security Council practice, armed-conflict-related linkages with environment-related phenomena[124] arise primarily in respect of the (actual or potential) implications of those phenomena on peace, security and stability. For example, the Council has referred to the effects of certain environment-related phenomena – namely climate change, ecological changes and natural

116 See e.g. UN Doc. S/PRST/2021/19, 20 October 2021, p. 4; UNSC Res. 2399, 30 January 2018, para. 21(e); UNSC Res. 2262, 27 January 2016, para. 13(d).
117 See e.g. UNSC Res. 1343, 7 March 2001, Preamble.
118 See e.g. UNSC Res. 2467, 23 April 2019, Preamble.
119 See e.g. UN Doc. S/PRST/2003/27, 15 December 2003, pp. 11–12.
120 See e.g. UNSC Res. 1379, 20 November 2001, para. 13(c); UNSC Res. 1314, 11 August 2000, para. 16(c).
121 See e.g. UN Doc. S/PRST/2021/19, 20 October 2021, pp. 3–4.
122 See e.g. UNSC Res. 2198, 29 January 2015, Preamble; UNSC Res. 2188, 9 December 2014, Preamble; UNSC Res. 2128, 10 December 2013, Preamble.
123 See e.g. UN Doc. S/PRST/2007/22, 25 June 2007, p. 3.
124 See above note 90.

disasters – on the security or stability of certain States, such as Sudan and other member States of the African Union, and regions, such as West Africa and the Sahel.[125] The Council has also recognized the "security implications" of environment-related phenomena such as climate change,[126] as well as ecological changes and natural disasters, including in certain States, such as Mali.[127] Further, the "changing global context of peace and security" includes, according to the Council, the impacts of climate change.[128]

Relations between armed conflict and chemical or biological weapons

From our perspective, the scope of the term "chemical weapons" may include all toxic chemicals, "regardless of their origin or of their method of production",[129] presumably including naturally occurring chemicals.[130] Accordingly, we considered references to "chemical weapons" to fall under the definition of the environment that we used for this project. Along similar lines, we considered the scope of "biological weapons" to include "microbial or other biological agents",[131] thereby falling within the purview of "biotic factors" in terms of the adopted definition of the environment.[132] In Security Council practice, armed-conflict-related linkages with chemical weapons arose primarily in the context of Syria and concerned the use of toxic chemicals as weapons,[133] as well as civilian injuries and deaths from toxic chemicals.[134] The Council has also referred to means of preventing the proliferation of chemical or biological weapons.[135]

Adverse impacts of armed conflict

The Security Council has recognized certain adverse impacts of armed conflict on the environment, including on livestock-grazing areas, fishing grounds and

125 See e.g. UNSC Res. 2579, 3 June 2021, Preamble; UN Doc. S/PRST/2021/3, 3 February 2021, p. 3; UN Doc. S/PRST/2021/21, 28 October 2021, p. 7; UN Doc. S/PRST/2021/16, 17 August 2021, p. 2.
126 See e.g. UN Doc. S/PRST/2011/15, 20 July 2011, p. 1.
127 See e.g. UNSC Res. 2423, 28 June 2018, para. 68.
128 See e.g. UNSC Res. 2242, 13 October 2015, Preamble.
129 Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, 1974 UNTS 45, 3 September 1992 (entered into force 29 April 1997), Arts II(1)(a), II(2). Exceptions include toxic chemicals and their precursors "intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes."
130 See, further, Miguel A. Sierra and Roberto Martínez-Álvarez, "Ricin and Saxitoxin: Two Natural Products that Became Chemical Weapons", *Journal of Chemical Education*, Vol. 97, No. 7, 2020.
131 Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, 1015 UNTS 163, 16 December 1971 (entered into force 26 March 1975), Art. I(1).
132 See the definition of the term "environment" in the above section on "Sources and Methods".
133 See e.g. UNSC Res. 2319, 17 November 2016, Preamble; UNSC Res. 2314, 31 October 2016, Preamble; UNSC Res. 2209, 6 March 2015, para. 1.
134 See e.g. UNSC Res. 2319, 17 November 2016, Preamble; UNSC Res. 2314, 31 October 2016, Preamble; UNSC Res. 2235, 7 August 2015, Preamble.
135 See e.g. UNSC Res. 2325, 15 December 2016, para. 14.

agricultural assets.[136] The Council has also referred to negative impacts of conflict on aspects of the environment in specific contexts, including:

- the negative impacts of armed conflict on natural areas in the DRC;[137]
- attacks on "natural assets" in the context of "escalat[ing] … conflict" in Libya;[138]
- the destruction of livestock as a result of acts of aggression and armed incursions by South Africa against Angola;[139]
- the depletion of natural resources in "Arab territories occupied since 1967, including Jerusalem";[140] and
- environmental damage and the depletion of natural resources as a result of Iraq's unlawful invasion and occupation of Kuwait.[141]

In terms of preventing possible adverse impacts on the environment, the Council has called for compliance with international legal obligations applicable during armed conflict related to sparing farms, water systems, foodstuffs, crops, livestock and agricultural assets.[142]

Personal scope

With respect to personal scope, in its practice concerning the environment and armed conflict, the Security Council has primarily addressed or otherwise referred to States, including all States,[143] specific States[144] and combinations of certain States.[145] The Council has also addressed or otherwise referred to a range of parties, including all parties in Syria in connection with cooperating with investigation and accountability processes concerning the use of chemicals as weapons in Syria;[146] parties to the conflict in the DRC in connection with cooperating with an expert panel on the illegal exploitation of natural resources and other forms of wealth in the DRC;[147] parties to the Comprehensive Peace Agreement in Liberia in connection with maintaining the government's authority over natural resources;[148] parties to the Comprehensive Peace Agreement in Sudan in connection with reaching agreement over natural-resource

136 See e.g. UNSC Res. 2417, 24 May 2018, Preamble.
137 See e.g. UN Doc. S/PRST/2021/19, 20 October 2021, p. 3; UNSC Res. 2612, 20 December 2021, para. 16; UNSC Res. 2556, 18 December 2020, para. 16.
138 UNSC Res. 2238, 10 September 2015, para. 5; UNSC Res. 2213, 27 March 2015, para. 4.
139 See e.g. UNSC Res. 571, 20 September 1985, Preamble; UNSC Res. 475, 27 June 1980, Preamble.
140 See e.g. UNSC Res. 465, 1 March 1980, para. 8.
141 See e.g. UNSCR 692, 20 May 1991, Preamble; UNSCR 687, 3 April 1991, para. 16.
142 UN Doc. S/PRST/2020/6, 29 April 2020, p. 1; UNSC Res. 2417, 24 May 2018, para. 1.
143 See e.g. UNSC Res. 2325, 15 December 2016, para. 14; UNSC Res. 1925, 28 May 2010, para. 8; UNSC Res. 1643, 15 December 2005, para. 6.
144 See e.g. UNSC Res. 2101, 25 April 2013, para. 25; UNSC Res. 2005, 14 September 2011, para. 9; UNSC Res. 1941, 29 September 2010, para. 4.
145 See e.g. UNSC Res. 1493, 28 July 2003, para. 28; UNSC Res. 1417, 14 June 2002, para. 15.
146 See e.g. UNSC Res. 2235, 7 August 2015, para. 4; UNSC Res. 2209, 6 March 2015, para. 6.
147 See e.g. UNSC Res. 1341, 25, 22 February 2001, para. 24; UNSC Res. 1332, 14 December 2000, para. 16.
148 See e.g. UNSC Res. 1521, 22 December 2003, para. 14.

management;[149] and, in general, all parties to armed conflict in connection with sparing, during armed conflict, certain objects, including farms, water systems, foodstuffs, crops, livestock and agricultural assets.[150] Further, the Council has addressed or otherwise referred to the UN in connection with considering the security implications of adverse effects of environment-related phenomena, namely climate change, ecological changes and natural disasters;[151] supporting national-level peacebuilding efforts, including management of natural resources;[152] and helping post-conflict governments manage their natural resources better or more lawfully, transparently and sustainably.[153] References to the UN Secretary-General in particular arose in the context of reporting on rights violations against children during armed conflict, including in connection with the illicit exploitation of natural resources,[154] and in the context of supporting investigation processes concerning the use of chemicals as weapons in Syria.[155] The Council has referenced UN missions, including peacekeeping operations in such conflict-affected contexts as the CAR and the DRC, in connection with managing the environmental impacts of UN activities in respect of those situations.[156] The Council has also referred to a UN mission in Guinea-Bissau with respect to making efforts to reduce the impacts of that mission's closure on that State's environment.[157] The Council has referenced panels or groups of experts, UN missions and UN committees in connection with linkages it has drawn between natural resources and conflict, including with respect to:

- reporting on the role of the exploitation of natural resources in fuelling conflict in the DRC;[158]
- recommending measures to prevent such exploitation from financing armed groups and militias in the eastern DRC;[159]
- reporting on the contribution of revenue from such exploitation to the income of armed groups in the eastern DRC;[160]
- reporting on the role of forests and other natural resources in contributing to peace and security in Liberia;[161]
- assisting governments in preventing illegal exploitation of natural resources from fuelling conflicts;[162]

149 See e.g. UN Doc. S/PRST/2011/3, 9 February 2011, pp. 1–2.
150 UN Doc. S/PRST/2020/6, 29 April 2020, p. 1; UNSC Res. 2417, 24 May 2018, para. 1.
151 See e.g. UNSC Res. 2423, 28 June 2018, para. 68.
152 See e.g. UNSC Res. 2109, 11 July 2013, Preamble; UNSC Res. 2057, 5 July 2012, Preamble; UNSC Res. 1996, 8 July 2011, Preamble.
153 See e.g. UN Doc. S/PRST/2021/19, 20 October 2021, p. 4; UN Doc. S/PRST/2015/3, 19 January 2015, pp. 3–4; UN Doc. S/PRST/2011/4, 11 February 2011, p. 2.
154 See e.g. UNSC Res. 1460, 30 January 2003, para. 16(b).
155 See e.g. UNSC Res. 2235, 7 August 2015, para. 5.
156 See e.g. UNSC Res. 2612, 20 December 2021, para. 45; UNSC Res. 2605, 12 November 2021, para. 44.
157 See e.g. UNSC Res. 2512, 28 February 2020, para. 7.
158 See e.g. UNSC Res. 1493, 28 July 2003, para. 28; UNSC Res. 1417, 14 June 2002, preambular para. 15.
159 See e.g. UNSC Res. 1698, 31 July 2006, para. 6.
160 UNSC Res. 1698, 31 July 2006, para. 6.
161 See e.g. UNSC Res. 2079, 12 December 2012, para. 5(d); UNSC Res. 2025, 14 December 2011, para. 5(d).
162 See e.g. UN Doc. S/PRST/2007/22, 25 June 2007, p. 2.

- seeking solutions to stop cross-border flows of natural resources that threaten peace and stability in the DRC;[163] and
- assessing the role of diamonds in the conflict in Sierra Leone and the link between trade in Sierra Leone diamonds and trade in arms and "related *materiél* [*sic*]".[164]

The Security Council has also referred to a fact-finding mission associated with the Organization for the Prohibition of Chemical Weapons in connection with reporting on the use of toxic chemicals for "hostile purposes" in Syria.[165] Further, the Council has addressed or otherwise referred to "importers and processing industries" in connection with adopting policies, practices and codes of conduct to prevent support to armed groups through the exploitation of natural resources in the DRC.[166] Similarly, the Council has included corporations – along with foreign governments and nationals – in a list of parties having experienced potential harm, in relation to environmental damage and the depletion of natural resources, as a result of Iraq's "unlawful invasion and occupation of Kuwait".[167]

Geographical scope

In terms of geographical scope, a significant portion of Security Council practice concerning the environment and armed conflict pertained to States and regions in the African States regional group. The Council has referred to Africa or African States in general[168] as well as to particular regions and States in Africa. References to particular States included those in connection with Angola,[169] the CAR,[170] Côte d'Ivoire,[171] the DRC,[172] Liberia,[173] Mali,[174] Sierra Leone,[175] Somalia,[176] South Africa,[177] South Sudan[178] and Sudan.[179] Furthermore, relevant Council practice also concerned States and regions in the Asia-Pacific States regional group, particularly Afghanistan,[180] Iraq,[181]

163 See e.g. UNSC Res. 2612, 20 December 2021, para. 26.
164 See e.g. UNSC Res. 1306, 5 July 2000, para. 12.
165 See e.g. UNSC Res. 2209, 6 March 2015, Preamble.
166 See e.g. UNSC Res. 1896, 7 December 2009, para. 16.
167 See e.g. UNSC Res. 687, 3 April 1991, para. 16; UNSC Res. 692, 20 May 1991, Preamble.
168 See e.g. UN Doc. S/PRST/2020/5, 11 March 2020, p. 3; UN Doc. S/PRST/2021/10, 19 May 2021, p. 3.
169 See e.g. UNSC Res. 571, 20 September 1985, Preamble.
170 See e.g. UNSC Res. 2605, 12 November 2021, Preamble; UNSC Res. 2552, 12 November 2020, Preamble.
171 See e.g. UNSC Res. 2153, 29 April 2014, para. 25.
172 See e.g. UNSC Res. 2463, 29 March 2019, Preamble; UNSC Res. 2348, 31 March 2017, Preamble.
173 See e.g. UNSC Res. 1521, 22 December 2003, para. 14.
174 See e.g. UNSC Res. 2531, 29 June 2020, Preamble; UNSC Res. 2480, 28 June 2019, Preamble.
175 See e.g. UNSC Res. 1306, 5 July 2000, para. 12.
176 See e.g. UNSC Res. 2607, 15 November 2021, Preamble; UNSC Res. 2551, 12 November 2020, Preamble.
177 See e.g. UNSC Res. 571, 20 September 1985, Preamble.
178 See e.g. UNSC Res. 2521, 29 May 2020, para. 15; UNSC Res. 2514, 12 March 2020, Preamble.
179 See e.g. UNSC Res. 2524, 3 June 2020, Preamble; UNSC Res. 2579, 3 June 2021, Preamble.
180 See e.g. UNSC Res. 2611, 17 December 2021, Preamble; UNSC Res. 2557, 18 December 2020, Preamble.
181 See e.g. UNSC Res. 2299, 25 July 2016, Preamble; UNSC Res. 2233, 29 July 2015, Preamble; UNSC Res. 687, 3 April 1991, para. 16.

Kuwait[182] and Syria.[183] The Council has made comparatively few references to States in other regional groups; those few references arose, for instance, in connection with the adverse impacts of certain environment-related phenomena on the depletion of natural resources in "Arab territories occupied since 1967, including Jerusalem".[184]

Temporal scope

Express references pertaining to temporal scope in Security Council practice concerning the environment and armed conflict include those in respect of time limits regarding processes for the identification of those involved in the use of chemicals as weapons in Syria;[185] the provision of information on the funding of illicit arms trade from natural resources in the DRC;[186] and the formulation of recommendations on measures to prevent the financing of armed groups and militias through illicit exploitation of natural resources in the DRC.[187]

Conclusion

The Security Council has expressly or impliedly recognized certain diverse connections involving the environment and armed conflict. The Council's practice in this area spans multiple agenda items, including many armed conflict contexts, and arguably reflects a relatively non-systematic approach on the part of the Council with respect to identifying and addressing issues involving the environment and armed conflict. The question of whether the Security Council ought to expressly and systematically address climate change, ecological crises or other environment-related matters – including those pertaining to armed conflict – on its agenda implicates a wide array of complex issues. From our perspective, additional reliable and accessible information relating to the following matters (among many others) may help stakeholders gain a wider and deeper perspective from which to formulate policy, allocate resources and, where warranted, develop law in this area:

- factually grounded analyses of the (in)effectiveness of the Security Council's actions pertaining to the environment and armed conflict, including in terms of the extent, if any, to which those actions have contributed in practice to safeguarding the environment and protecting affected populations;

182 See e.g. UNSC Res. 687, 3 April 1991, para. 16; UNSC Res. 692, 20 May 1991, Preamble. As with Afghanistan, Syria and Iraq, the classification of Kuwait as part of the Asia-Pacific region is based on the UN's informal regional grouping: see above note 61 and associated main text.
183 See e.g. UNSC Res. 2235, 7 August 2015, para. 4; UNSC Res. 2209, 6 March 2015, para. 6.
184 See e.g. UNSC Res. 465, 1 March 1980, para. 8.
185 See e.g. UNSC Res. 2235, 7 August 2015, para. 5.
186 See e.g. UNSC Res. 1807, 31 March 2008, para. 18(d).
187 See e.g. UNSC Res. 1698, 31 July 2006, para. 6.

- relevant practice and the corresponding (in)effectiveness of other UN principal organs, including the General Assembly, the Economic and Social Council and the International Court of Justice, as well as of regional organizations, such as the African Union, the European Union, the League of Arab States and the South Asian Association for Regional Cooperation;
- situation-specific studies on the effects of peace and armed conflict in relation to the environment in general and to climate change and ecological crises in particular; and
- systematic studies of the (in)sufficiency of existing fields of international law to satisfactorily safeguard and protect the environment, including in relation to armed conflict.

In our view, any such information and analysis ought to take into account the extensive scientific evidence compelling the need to address climate change and ecological crises on an urgent basis.

International Review of the Red Cross (2023), **105** (924), 1668–1672.
Protecting the Environment in Armed Conflict
doi:10.1017/S181638312300022X

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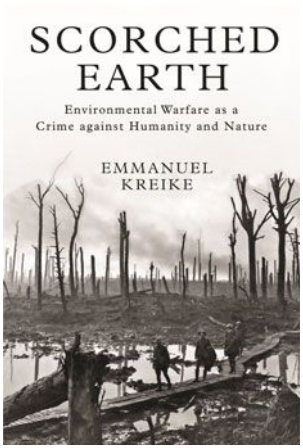

Scorched Earth: Environmental Warfare as a Crime against Humanity and Nature

By Emmanuel Kreike*

Book review by Charlotte Mohr, ICRC Reference Librarian for the collections on the ICRC's history and activities.

Despite its title, *Scorched Earth* is not a book about the environmental cost of war – or, more accurately, it is not a book focusing on how war harms the environment rather than on how it harms humans. Surveying over four centuries of environmental warfare in the modern era, the book looks instead at the destructive effect of war on the society and environment nexus. The nature–culture dichotomy casts a long shadow, Emmanuel Kreike argues: for too long, the effects of war on human societies, on one side, and on the environment, on

* Published by Princeton University Press, Princeton, NJ, and Oxford, 2021. Emmanuel Kreike is professor of African and environmental history at Princeton University. His research looks into the impact of violence and war on populations and their environment. Based on field and archival research in Angola, Mozambique, Namibia, and Senegal, his publications include *Re-creating Eden: Land Use, Environment, and Society in Southern Angola and Northern Namibia* (Heinemann, 2004), *Deforestation and Reforestation in Namibia: The Global Consequences of Local Contradictions* (Brill and Markus Wiener, 2010) and *Environmental Infrastructure in African History: Examining the Myth of Natural Resource Management in Namibia* (Cambridge University Press, 2013).

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the other, have been studied separately. This same dichotomy has permeated international criminal law, in the definitions of genocide and ecocide. But thinking about the environmental cost of warfare in isolation, the author finds, fails to capture the scale of destruction caused by scorched-earth tactics throughout history. It also overlooks the genocidal consequences of destroying a population's environment. Published as part of Princeton University Press's Human Rights and Crimes against Humanity series, *Scorched Earth* is thus, true to its premise, a human-centred history of environmental warfare.

How does one describe in simple terms the harm caused by war to lived-in environments? The author introduces two key concepts early on: "environmental infrastructure" and "environcide". The first refers to the ensemble of structures and systems that make up the human-shaped environment, from homes to cultivated fields, food stores, dams and canals. The second concept echoes, but differs from, the terms "genocide" and "ecocide". The author makes a case for reframing environmental warfare as a crime against both humanity and nature. The term "environcide", he argues, captures better than "ecocide" the interrelated nature of environment and society and the damage incurred by the latter when warfare destroys the former. Applied to the history of modern wars, this framework opens new avenues for understanding the indirect consequences of scorched-earth tactics, often longer-lasting and more widespread than assumed, and the challenges of post-conflict reconstruction. "Environment", by contrast, is not restrictively defined in the book; the author considers the destruction of

barns and orchards, the theft of agricultural and trade equipment, and the extortion of cash, food and forage, all as different pieces of the same puzzle.

Scorched Earth looks at a number of conflict-affected societies between the late sixteenth and early twentieth centuries, on five continents. Its structure is largely chronological, but the book plays with scale. The author recounts stories across timelines ranging from a couple of years to centuries, and zooms in on specific villages before looking at an entire continent. He traces scorched-earth tactics back to a time when armies literally marched on their stomachs, having to live off the land they conquered, and he then shows that such practices did not abate as the military logistical apparatus developed. The environment remained a central target, object and tool of warfare throughout the modern era and beyond. Its exploitation sustained the war effort, deprived the enemy of key resources, and forced local populations into submission.

Across ten chapters, *Scorched Earth* describes how different communities invested in and shaped their environment through a variety of labour- and time-intensive processes – and how war, time and time again, caused such painstakingly built and maintained infrastructure to collapse. *Dramatis personae* include commanders and colonizers, soldiers and settlers, but also farmers, villagers and refugees. The book is based on extensive archival research; it draws from the tax records of sixteenth-century Holland, analyzes archaeological records of Pueblo peoples in sixteenth-century Central America, and reads between the lines of Dutch military journals of the nineteenth-century conquest of Aceh. Each chapter opens with a quote from a contemporary source, illustrating in a few evocative lines the consequences of environmental warfare. These sources help the author reconstruct the trajectories of individuals and communities in war. His interest lies in the agency and resilience of categories of people rarely placed front and centre as historical actors, and his portrayal remains nuanced; the book notably explores how victims of environmental warfare sometimes became perpetrators themselves, engaging in short-sighted but necessary survival strategies that harmed other communities or exterminated plant or animal species.

The opening chapter introduces a major theme of the book: the contrast between the hasty destruction of environmental infrastructure in warfare and the long, difficult work of post-conflict reconstruction. Set in sixteenth-century southern Holland, during the revolt against King Philip II of Spain, it recounts how the rebels used massive flooding as a tactic of warfare in 1574. This caused immense damage to the countryside, forcing farmers and villagers to evacuate. Because the dikes destroyed by the rebels took a long time to repair, much of southern Holland was still inundated years later, and the countryside remained depopulated.

Chapters 2, 4 and 8 take a second look at the "virgin soil epidemics" model explaining the demographic collapse of indigenous societies during the wars of conquest. This model, first put forward in the 1970s, presents demographic and societal collapse after contact with European settlers as the inevitable consequence of "Old World" diseases making their way through "New World" communities

with no prior immunity. *Scorched Earth* argues that this explanation glosses over not only the direct violence of conquest, but also the deadly consequences of displacing indigenous populations and separating them from the environmental infrastructure that sustained their lives.

First, Chapter 2 reframes the demographic collapse of the indigenous American people during the sixteenth-century Spanish conquest as a consequence of environcidal warfare. Kreike presents the elaborate infrastructure of those societies and shows how it was taken over, exploited or destroyed by the conquistadors. As communities were forcibly displaced, the fertile dark soils disappeared, the irrigation systems collapsed, the range of crops cultivated diminished, and the health of the indigenous population dramatically declined. Epidemics may be at least partly to blame for the demographic collapse of the indigenous American population in the sixteenth century, but it was the environcidal Spanish conquest that made them particularly vulnerable to diseases in the first place.

Set a century later, Chapter 4 contrasts the similarly advanced (and under-studied) infrastructure maintained by indigenous North Americans with European sources portraying their societies as precarious and "wild". The author shows how European settlers minimized indigenous environmental infrastructure in discourse, but relied on it and appropriated it in practice for their own survival. Here again, war and displacement caused the indigenous population's health to decline. People fled for safety, and as villages became denser, epidemics turned them into death-traps.

Similar dynamics play out again in Chapter 8, set in the nineteenth-century American West. Kreike refutes what he calls an "environmentally deterministic argument"[1] that presents Western Native Americans as nomadic hunter-gatherers. He argues that they should instead be seen as war refugees who turned to such practices to survive, after being displaced and robbed of their environmental infrastructure. The author unpacks a discourse that originated in contemporary sources and later permeated the historical narrative, minimizing indigenous peoples' ties to their land in order to legitimize its theft.

Set in the eighteenth century, Chapters 5, 6 and 7 take on what the author calls the "myth of limited war". The idea of civilized, rational, limited war began to take hold in both pamphlets and military orders during the age of reason. "Marauding" (which included murder, rape and theft) was outlawed, and soldiers' looting was replaced by taxes and requisitions. And yet, the author argues, total warfare remained the norm. The infamous sack of the Dutch town of Bergen op Zoom by French soldiers in 1747, which had outraged European opinion, has been wrongly depicted as an exception to the general rule of "limited war" in the eighteenth century. Using examples from the War of the Spanish Succession (1701–14), the War of the Austrian Succession (1740–48) and periods of mass violence in Ghana, Sri Lanka and Indonesia throughout the century, the author shows that total warfare remained a widespread, global phenomenon. Between the sixteenth and the eighteenth centuries, he argues,

1 *Scorched Earth*, p. 282.

there were far more similarities in the conduct of war than differences. The book shows how rules of war promulgated by heads of State failed to be respected and enforced, to the point of being little more than window dressing. The sources presented echo present-day debates: "critics of limited war … at times openly contested the rules of war as being ineffective or even counterproductive given that they were seldom enforced, or unenforceable, or because they seemingly prolonged wars, making them more costly economically, politically, military and socially".[2] Yet the book paints such a vivid picture of the destructive consequences of total war that it can hardly be read as anything other than a strong argument for the current legal regime protecting civilians, civilian infrastructure and the environment from the worst effects of warfare.

In the tenth and final chapter, Kreike draws a straight line from the 1900–17 Portuguese conquest of the Ovambo floodplain and the First World War to the 1920s "famine of the dams" in Angola and Namibia. The famine has traditionally been attributed to climatic factors, but *Scorched Earth* reframes it instead as a consequence of past warfare and mass population displacement. It shows how the environmental infrastructure that was critical to ensuring population resilience in times of drought and poor harvests, such as granaries and water holes, had either collapsed or proved insufficient to support local populations and war refugees, as a direct consequence of past conflicts.

Ultimately, this leads us to perhaps the most compelling point made by this 400-page study of environmental warfare: history has too often and too easily attributed to natural disasters and epidemics death and destruction that were really the consequence of total warfare. Simply put, war leaves communities incredibly vulnerable to the other three horsemen of the apocalypse: famine, disease and death. All four loom large on every page of the book. *Scorched Earth* is a history of never-ending loss, of the alienation of land and environmental resources, century after century. The author's tour de force, then, is to successfully dig different and important insights out of similar stories, preventing the book from turning into a litany of pillages and plunders, extortions and exactions, sackings and burnings. Set in a distant but far from irrelevant past, *Scorched Earth* is thus a cautionary tale about the danger of underestimating both how much we depend on our environment and how much damage total war can cause.

2 *Ibid.*, p. 244.

International Review of the Red Cross (2023), **105** (924), 1673–1689.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000474

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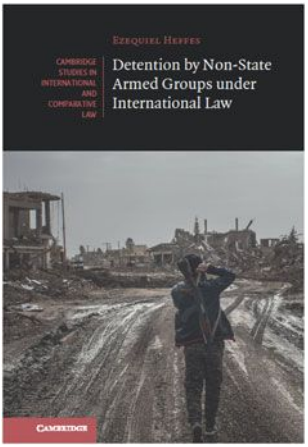
BEYOND THE LITERATURE



Detention by Non-State Armed Groups under International Law

By Ezequiel Heffes*

In "Beyond the Literature", the Editorial Team of the *International Review of the Red Cross* selects a recently published volume in the field of humanitarian law, policy and action and convenes a discussion on the book among experts, in an effort to foster constructive engagement on some of the most promising recent literature in the field.

In this iteration of the Review*'s "Beyond the Literature" series, we have invited Ezequiel Heffes to introduce his recent book* Detention by Non-State Armed Groups under International Law, *before then posing a series of questions to Tilman Rodenhäuser, René Provost, Mariana Chacón Lozano and Katharine Fortin, who have agreed to serve as discussants of the book. Tilman Rodenhäuser is a Legal Adviser at the International Committee of the Red Cross (ICRC), with*

* Published by Cambridge University Press, Cambridge, 2022. Discussion conducted by Bruno Demeyere, Editor-in-Chief of the *Review*.

The advice, opinions and statements contained in this article are those of the author/s and do not necessarily reflect the views of the ICRC. The ICRC does not necessarily represent or endorse the accuracy or reliability of any advice, opinion, statement or other information provided in this article.

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particular expertise in non-State armed groups (NSAGs) and detention. René Provost is the James McGill Professor of Law at McGill University and has written extensively on public international law, including his recent monograph Rebel Courts: The Administration of Justice by Armed Insurgents.[1] *Mariana Chacón Lozano has served as the Operational Legal Coordinator for the ICRC in Colombia since October 2020 and has worked for the ICRC since 2011. Katharine Fortin is Associate Professor at the Netherlands Institute of Human Rights within the Faculty of Law, Economics and Governance of Utrecht University. The* Review *team is grateful to all four discussants, and to Ezequiel, for taking part in this engaging conversation.*

Keywords: non-State armed groups, international humanitarian law, detention, Beyond the Literature, non-international armed conflict.

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Ezequiel, what motivated you to write this book? What message does the book convey?

Ezequiel Heffes: First of all, I would like to express my gratitude to the *International Review of the Red Cross* and its team for the opportunity to discuss my book *Detention by Non-State Armed Groups under International Law*. I would also like to thank Katharine Fortin, Tilman Rodenhäuser, Mariana Chacón Lozano and René Provost for their reflections and thoughtful comments.

The inception of this book, which is based on my PhD at the University of Leiden, can be traced back to over a decade ago. I had my first opportunity to discuss the role of NSAGs in armed conflicts and their regulation under international law when I was preparing to participate in the 2011 Jean-Pictet Competition. At the time, the landscape of research pertaining to these entities and their legal status and activities within the international legal framework remained relatively uncharted, despite their increasing involvement in armed conflicts worldwide. Except for in a handful of specialized studies, NSAGs were, for the most part, relegated to general discussions within international humanitarian law [IHL] literature in chapters focusing on non-international armed conflicts [NIACs]. This situation has undergone a significant transformation since 2010, and the last few years have seen an exponential proliferation of literature focusing on NSAGs in different ways.[2]

The legal regulation of detention by NSAGs was an especially ripe and front-of-mind topic in 2014. At the time, I was working for a humanitarian organization that engages parties to armed conflict on various issues, including

1 René Provost, *Rebel Courts: The Administration of Justice by Armed Insurgents*, Oxford University Press, New York, 2021.

2 See, for example, thematic issue on "Non-State Armed Groups", *International Review of the Red Cross*, Vol. 102, No. 915, 2022, available at: https://international-review.icrc.org/reviews/irrc-no-915-non-state-armed-groups (all internet references were accessed in September 2023).

on those related to detention and treatment of detainees, when the first *Serdar Mohammed* decision came out.[3] That same year, the ICRC also released its policy paper entitled *Internment in Armed Conflict: Basic Rules and Challenges*.[4] Both presented contrasting views regarding the legal basis to deprive individuals of their liberty in NIACs. I found myself grappling with fundamental questions: what would be an appropriate response if an NSAG's commander were to inquire about the legal basis to detain individuals, especially enemy fighters? How would I respond if a detainee in the hands of an NSAG asked about the legality of their detention? Was there a basis under IHL that could authorize such activity, or could NSAGs invoke a different legal framework to justify their actions?

This book addresses these queries based on a doctrinal study of normative and jurisprudential developments related to NSAGs' detentions within the various branches of international law, as well as an assessment of different means used by these entities to express their views, and selected case studies. It proposes that IHL and, on certain occasions, international human rights law [IHRL] oblige NSAGs not to arbitrarily deprive individuals of their liberty, that NSAGs must have a legal basis to undertake these activities, and that said basis is to be found in those laws and regulations adopted by the group itself, should these be respectful of international law. Alternatively, an NSAG might, for example, adapt the territorial State's domestic law or conclude an agreement with that same State or an NSAG that it is fighting against. These sources could allow NSAGs to potentially respect their obligations in the field of detention, including the principle of legality, addressing in tandem the various types of detention that NSAGs carry out in NIACs.

The book should be seen as practice-driven, as it tackles some of the recurring scenarios observed in the battlefield when NSAGs detain and proposes practical solutions and guidelines to increase the protection effected by these non-State entities in conflict settings.

Discussants, do you share the book's primary premise that NSAGs should be allowed to rely on their own norms to prevent the arbitrariness of their detention activities under international law?

Tilman Rodenhäuser: Before answering the question, I would like to congratulate Dr Heffes for having completed a book that treats a highly relevant subject, combines thorough legal analysis with case studies and strives to provide solutions.

At the ICRC, our most recent estimate is that over 100 armed groups hold detainees.[5] The reality we see is diverse, ranging from a handful of people detained for alleged crimes and held in a town under the armed group's control, all the way to

3 UK High Court of Justice, *Serdar Mohammed v. Ministry of Defence*, Case No. HQ12X03367, 2 May 2014.

4 ICRC, *Internment in Armed Conflict: Basic Rules and Challenges*, opinion paper, Geneva, November 2014, available at: www.icrc.org/en/document/internment-armed-conflict-basic-rules-and-challenges.

5 For a recent ICRC study on this subject that combines a restatement of the IHL rules applicable to detention by NSAGs and a selection of practical measures for how they can be implemented, see ICRC, *Detention by Non-State Armed Groups: Obligations under International Humanitarian Law and*

thousands of "enemy" soldiers detained in prisons. Heffes' law- and practice-based analysis of this subject is thus welcome and needed.

Coming back to the question on the book's primary premise, my answer is a qualified yes. In my view, there are two sides to this answer. On the one hand, and as I will explain further below, IHL does not prohibit NSAGs from relying on their own laws or norms when detaining people in relation to an armed conflict; in fact, it may be argued that they must have laws or norms in place to comply with IHL if they detain. On the other hand, there are limits on the content of such laws, some of which I will come back to below.

In his book, Heffes looks at two types of detention that are explicitly mentioned under IHL treaties and commonly occur in practice: "criminal detention", meaning the detention of a person who is suspected of having committed a crime, is awaiting trial or sentencing, or has been convicted of a crime; and "internment", which refers to detention for security reasons in situations of armed conflict.

If we look at the question of which laws NSAGs are allowed to rely on in the context of criminal detention, our starting point should be the penal law principle, explicitly found in IHL, that "no one shall be held guilty of any criminal offence on account of any act or omission which did not constitute a criminal offence, under the law, at the time when it was committed".[6] Thus, if an NSAG conducts a trial, it may only convict for a crime as defined under the law as it applied at the time the alleged crime was committed. Heffes rightly explains that IHL does not specify which "law" an NSAG may apply when conducting criminal trials. Based on the wording of Additional Protocol II to the Geneva Conventions [AP II] and its drafting history, the ICRC supports the view that NSAGs can conduct trials based on the law of the State in whose territory they operate or a law adopted by an NSAG, provided this law is in compliance with international law.[7] This view reflects the reality of the past decades: in practice, NSAGs have continued to

Examples of How to Implement Them, Geneva, 2023, available at: www.icrc.org/en/document/detention-non-state-armed-groups.

6 Protocol Additional (II) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978) (AP II), Art. 6(2)–(4); Jean-Marie Henckaerts and Louise Doswald-Beck (eds), *Customary International Humanitarian Law*, Vol. 1: *Rules*, Cambridge University Press, Cambridge, 2005 (ICRC Customary Law Study), Rule 101, available at: https://ihl-databases.icrc.org/en/customary-ihl.

7 See also ICRC, *Commentary on the Third Geneva Convention: Convention (III) relative to the Treatment of Prisoners of War*, 2nd ed., Geneva, 2020 (ICRC Commentary on GC III), para. 728. Note that the English version of Article 6(2)(c) of AP II speaks of "law", unlike the French version, which speaks of "domestic and international" law. As the ICRC Commentary of 1987 explains: "The possible co-existence of two sorts of national legislation, namely, that of the state and that of the insurgents, makes the concept of national law rather complicated in this context": see Yves Sandoz, Christophe Swinarski and Bruno Zimmerman (eds), *Commentary on the Additional Protocols*, ICRC, Geneva, 1987 (ICRC Commentary on the APs), para. 4605. This view was supported by States during the negotiations and subsequently. See Michael Bothe, Karl Josef Partsch and Waldemar A. Solf, *New Rules for Victims of Armed Conflicts: Commentary on the Two 1977 Additional Protocols to the Geneva Conventions of 1949*, Martinus Nijhoff, The Hague, 1982, pp. 746–747, para. 2.7; Sandesh Sivakumaran, *The Law of Non-International Armed Conflict*, Oxford University Press, Oxford, 2012, p. 561. See also ICRC Commentary on GC III, above, para. 728.

apply the criminal law already in place prior to the conflict – at times with certain changes – but have also developed new criminal law defining crimes and sentences, often modelling such laws on the laws of third States or laws accepted in the region in which they operate.[8]

This being said, additional questions arise, especially on how a law is adopted and promulgated, and whether an NSAG would be at liberty to adopt laws that reflect its interest or ideology but infringe on the protection and rights that international law provides for people (Heffes discusses some of these laws on pages 183–184 of his book). On the latter point, the least that must be stressed is that such laws must not violate IHL, for instance by discriminating in the application of law against certain groups or "authorizing" punishments prohibited under IHL. A more challenging question is whether it could ever be legally permissible for an NSAG to adopt and enforce laws that restrict the human rights of people living in territory under its control if such rights are protected under international law treaties binding on the territorial State.

The legal analysis is different when we consider "internment", to which penal law principles such as *nullum crimem sine lege* do not apply. As Heffes examines at length, the ICRC's view is that IHL contains "an inherent power to detain in non-international armed conflict. However, additional authority related to the grounds and procedure for deprivation of liberty in non-international armed conflict must in all cases be provided, in keeping with the principle of legality."[9] Thus, to avoid that internment turns into arbitrary detention, meaning people being interned for vague reasons and without procedural safeguards, grounds and procedures for internment must be established by the NSAG leadership in a set of rules that are respected by NSAG members and enforced by the NSAG's internal disciplinary system. In other words, NSAGs must provide grounds and procedures for internment in rules that are considered binding by all members, which could be their laws, rules, code of conduct, general orders or similar instructions.[10] Importantly, the grounds and procedures defined in such rules must not be a "fig leaf" for arbitrary detention but must limit internment to cases in which such detention is necessary for imperative reasons of security and for which procedural safeguards are in place.

Katharine Fortin: Yes, I think that this part of the book is very well reasoned. I share the view that there is no legal basis for parties to detain in treaty or customary IHL that applies to NIACs. Although I see why some people have said that the treaty law recognizes a "power" to intern, I have never been sure what the word "power" means in this context – in fact, I have increasingly become convinced that it is a word carrying very little legal consequence, especially since most parties who use it agree that an "additional authority" is needed for the grounds and process of the detention. In this sense, I agree with the book's primary premise that in order

8 See ICRC, above note 5, p. 59.
9 ICRC Commentary on GC III, above note 7, para. 765.
10 ICRC, above note 5, pp. 55–56.

for detention by armed groups to be lawful, it is necessary to identify some kind of other external legal rule to justify it, such as the pre-existing law of the State, or the armed group's own domestic law.

While some scholars may (still) find this a rather radical prospect, the book convincingly argues that there are good reasons for this position. The first set of reasons are legal, the strongest being indications that the drafters of Article 3 common to the four Geneva Conventions [common Article 3] and AP II were well aware that armed groups could have their own laws and would rely upon them in certain circumstances. The second set of reasons are pragmatic. As the book points out, there is very often a working set of laws in force in armed group territory, and it makes a lot of sense to say that they have to be relied upon. Otherwise, one ends up with the ironic situation in which it is the international legal framework itself that turns these spaces into Hobbesian lawless zones, even though a wealth of empirical research has long recognized that this is far from being the case on the ground. There is, however, one point on which Ezequiel will need to convince me a little: while I agree that there is evidence that civilians can benefit from laws being in place, those laws being known, and armed actors relying upon them in their daily interactions with the civilian population, I am not sure that I would go so far as to say that armed groups should be encouraged to pass laws. I find this quite a radical prospect, and I do wonder whether there could be merit in exploring alternative suggestions – for example, the use of model criminal codes, like in Syria, where the Unified Arab Code was employed in some areas.

René Provost: I think that it is very difficult to challenge the soundness of the premise of the book that armed groups can invoke their own legal standards as the basis for detention in conflict zones. One of the many merits of this very good book is that it starts from an acknowledgement that there is a significant body of detention practice on the part of NSAGs, a reality that States engaged in hostilities against such groups have been keen to systematically hide from view or, alternatively, to recast as kidnapping aimed at extortion or reflecting arbitrary brutality. Indeed, States most often reach for the label of terrorism to characterize the nature and actions of insurgents in armed conflicts, a stance that forestalls any possibility of discerning between lawful and unlawful detention at the hands of such groups. Despite the admittedly fluid definition of terrorism in international law, lawyers should resist this reductive move to the semantics of terrorism and should try to ascertain more closely and discerningly the practice of each specific group in a given conflict. As Heffes notes, it is not at all unusual for armed groups to deploy forms of public governance in areas under their authority. Thus, insurgents become providers of public goods like education, health, security, environmental protection, justice, and many more. Such public governance may or may not be carried out by formal institutions established by armed groups, but the nature of these public services does call for normative structuring.

Detention, the focus of this book, thus demands a set of rules that will determine the circumstances justifying detention and the conditions under which it

will take place. It is possible that an armed group will simply apply State law, as some of the rebel groups did in the NIAC in Syria. Alternatively, rebels may apply international law, as the Farabundo Martí National Liberation Front did in El Salvador; local customs, as the Revolutionary Armed Forces of Colombia – People's Army [Fuerzas Armadas Revolucionarias de Colombia – Ejército del Pueblo, FARC-EP] did in Colombia; foreign law, as the Liberation Tigers of Tamil Eelam partly did in Sri Lanka; or religious law, as the Taliban and the so-called Islamic State of Iraq and Syria did in Afghanistan and Iraq. Importantly, groups will sometimes elect to legislate their own laws that align with the ideology fuelling the insurgency. I would query Heffes' tendency to put "law" in scare quotes when referring to rebel law in the book; much of the world operates largely on the basis of law that does not owe its authority to the State but rather comes from customs and practices, and it is unremarkable to acknowledge that this may be the case for NSAGs as well.

The book argues that detention activities by NSAGs are better understood when categorizing these actors in ideal types (*de facto *authorities, armed opposition groups and militias). According to the author, this could serve to predict how similar types of groups operate. Do you agree?

Mariana Chacón Lozano: First, I'd like to congratulate Dr Heffes for the thorough research and analysis reflected in his book, which, while combining theory and practice, endeavours to propose ways forward on a subject that is of great importance for the protection of people affected by armed conflicts, particularly those detained by NSAGs.

To answer the question, I agree, though with a caveat. I understand that proposing a categorization of NSAGs would not only serve the pragmatic purpose set forward by the author – that is, predicting how similar types of groups operate – but would also address Heffes' concern about a State-centric view of international law where all non-State actors are defined only in opposition to States. This is very valuable in and of itself, taking into consideration the realities of NIACs. In addition, as a matter of practice, I do believe that grouping NSAGs based on their characteristics does help us to adopt parameters within which obligations and messaging can be adapted and transmitted more effectively.

Nonetheless, I would argue that basing this characterization not only on the "extent [that NSAGs] exert control over territory and population … and [their] internal organizational structures" but also on "their objectives"[11] may play against the desired effect of finding more effective ways to ensure that NSAGs respect IHL. Experience has taught me that the line is blurrier than described by Heffes, particularly between "militias" and "armed opposition groups", even more taking into consideration that during protracted armed conflicts, an NSAG's objective or structure may change rapidly. This has happened in Colombia between 2017 and 2023, as most of the five NSAGs classified by the

11 *Detention by Non-State Armed Groups under International Law*, p. 64.

ICRC as parties to seven NIACs[12] have adapted both their structures and their motivations to position themselves as best as possible vis-à-vis the Colombian government and other NSAGs. To provide a specific example, the Autodefensas Gaitanistas de Colombia, an NSAG linked to paramilitary origins[13] and therefore likely defined by Heffes as a "militia", possesses a structure, dynamic and behaviour that would be more adequately described within the realm of "armed opposition groups". The group has been classified by the ICRC as a party to two NIACs, one against the State and another against an NSAG, the National Liberation Army.

Heffes does recognize that these issues exist,[14] but I think more attention could be paid to the potential unwanted negative incentives that the categorization according to "motivations" could create. Often, both State and non-State actors link the existence of an armed conflict to an armed group's (political) objectives, bringing the "legitimacy" argument to the table, hence challenging the application of IHL in situations where such political objectives are not existent or not clear.

Therefore, while I agree that a certain categorization of NSAGs is useful for approaching their obligations under IHL, from a legal point of view I'd recommend staying away from using the motivation or objectives of the group in such categorization, without denying that both factors could be useful for determining how to approach such groups, engage in dialogue, and make their obligations understood and resonate with them.

Finally, it's important to highlight that even if we categorize NSAGs into "ideal types", the IHL obligations binding such groups are the same for all three types. At the same time, when proposing to call on NSAGs to respect IHRL as a matter of policy, the question remains as to which IHRL responsibilities would be demanded from which type of armed group. In my view, for this assessment a categorization as proposed by Heffes has particular value.

Katharine Fortin: Yes, I think that there is certainly merit to this, particularly when considering issues relating to compliance. To an extent, the typology adopted by the book mirrors the typology that is encouraged by the legal framework itself, which distinguishes between two thresholds of NIACs: common Article 3 and AP II. Common Article 3 applies to groups fighting in opposition to the government (what Heffes calls "armed opposition groups"); AP II adds to those obligations, when armed groups control territory, and applies to what Heffes calls "*de facto* authorities". Heffes adjusts this typology a little bit, for example by adding an

12 ICRC, *Colombia: Retos Humanitarios 2023*, March 2023, available at: www.icrc.org/es/document/colombia-retos-humanitarios-2023. The ICRC has classified seven NIACs in Colombia: three between the State and NSAGs, and four between NSAGs.

13 Luz Ángela Domínguez Coral, "¿Cuál es el origen de las Autodefensas Gaitanistas de Colombia?", *El Tiempo*, 28 June 2023, available at: www.eltiempo.com/justicia/conflicto-y-narcotrafico/cual-es-el-origen-de-las-autodefensas-gaitanistas-de-colombia-781574.

14 *Detention by Non-State Armed Groups under International Law*, p. 64.

extra "militia" category, which divides the traditional common Article 3 category into two subcategories. This typology is useful because the more that is known about the relationship between compliance and the organizational features of armed groups, the better. I think the use of such a typology could serve to predict how similar types of groups will operate or what can be expected of certain groups, in functional or operational terms – but there are limits to the extent to which this kind of typology can predict a group's compliance with IHL. Research has long shown that there are many other factors driving a group's compliance, such as ideology, funding, culture, religion, relationship with the civilian population, military strategy, and the cultural and political environment out of which the group has emerged. These factors are not captured by this typology.

The "militia" category, also referred to as paramilitary groups, self-defence groups and vigilantes, may need a bit more thought. In particular, I would caution against placing groups fighting on the side of the State and groups fighting independently against the State in the same category. It might be sensible to keep groups fighting *on the same side as the State* in a separate category of their own, due to the special considerations that need to be weighed when determining whether they have independent legal personality and the need to take into account the group's relationship with the State when thinking about compliance. It is noted that the Alliance of Patriots for a Free and Sovereign Congo [Alliance des Patriotes pour un Congo Libre et Souverain, APCLS] – a "militia" that is the subject of a case study in the book – is a group fighting against the government, so these issues do not arise in this case.

René Provost: Jurists toil under the empire of legal categories. The very architecture of legal discourse demands that arguments be constructed by placing claims in identified boxes to which are tied particular catalogues of rights and obligations. The nearly irrepressible urge of lawyers, as architects of social structures, to create and invoke categories is not, however, without its dangers. It is important to keep in mind that while categorizing can regulate, it is an operation that demands a degree of violence to suppress the ineluctable variety that subsists within any class of thing: it foregrounds some facets while erasing some others.

All of this is a roundabout and admittedly obscure way of saying that I am somewhat sceptical of the categories of NSAGs put forward by Heffes in his book. He identifies three ideal types under which to classify the detention practices of armed groups: *de facto* authorities, with effective control over a territory and population; armed groups, with a somewhat lower degree of control; and militias, which do not control territory. We see that the idea of control over territory is the central differentiating criterion among these three categories. Both the notions of "control" and "territory" are ones that we international lawyers tend to use constantly, but without critical interrogation. Other fields like human geography have much to offer to our discipline in this regard, in terms of explaining how the idea of territory is distinct from that of land or geography; indeed, we can understand the concept of territory as incorporating notions of control or administration. Heffes is aware of this challenge and admits that the

typology is made difficult by the incompleteness of the available data with respect to any given armed group, and by the fluidity in the structure and practice of armed groups over time and place.

We might see in the typology a reflection of the "not-a-cat syndrome" articulated by Philip Alston and mentioned in the book: we tend to define non-State actors by the extent to which they are not States, rather than defining them on the basis of parameters that reflect their own nature. As much as we admit that there is no Montevideo Convention for NSAGs, we still grasp at territory as a defining feature of any legally significant entity in international law. Heffes offers case studies corresponding to each ideal type: the Kurdish Autonomous Administration of North and East Syria [AANES] as a "*de facto* authority", the FARC-EP in Colombia as an "armed opposition group", and the APCLS as a "militia". I am familiar with the first two for having done case studies of their justice practices, much less so with the third one, and I struggle to align in any neat fashion the AANES and the FARC-EP respectively with the first two categories. These two groups, in a fashion that is frequently observed, display a pattern of effective authority that does not mirror that of States. The territory is most often under a degree of shared authority, not only in "rebel areas" but even in government areas. Just as the State rarely vanishes altogether from areas under rebel control, armed groups are often able to effectively project effective authority in areas under government control. For example, the first stage of the Taliban takeover of a government district in Afghanistan involved the Taliban deploying its own judges, in a manner that was far from meaningless despite not being supported by anything like "control" over the area.

The danger posed by the typology suggested by Heffes is that we reject State denialism of rebel governance only to recreate it along different lines. The alternative is a fuzzier, messier approach that grapples with the factual uncertainties of armed insurgency in order to apply legal standards in a tailored manner that is a neater fit to the reality on the ground and the humanitarian needs of victims of war.

Heffes proposes a series of minimum humanitarian principles applicable to situations of detention by NSAGs, based on some selected case studies. What is your opinion of this proposal? To what extent are these principles reflected in the practice of NSAGs already?

René Provost: It seems very important to assert, as Heffes does in his book, that any detention carried out by NSAGs ought to be governed by minimum humanitarian principles. This is so primarily because to deprive an individual of their liberty amounts to a violation of a fundamental right protected under both IHL and IHRL, often placing that person in a position of extreme vulnerability in which several other fundamental rights may be violated; as a result, this is a situation that must be regulated under international law. A set of minimum humanitarian principles is also justified because when an armed group detains an individual, either as part of a criminal accountability process or as a security-related internment, it very often makes a particular claim of authority reflecting

collective interests inscribed in law (broadly defined). Whether the law in question is State law, international law, religious law or rebel law, the invocation of legal authority amounts to a decision-making process grounded in pre-existing norms applied in a fair manner. What a fair process corresponds to depends on the nature of the process to which this idea is applied: what is fair in a labour arbitration, in a divorce proceeding before a religious tribunal, in a civil liability class action in State court or in a criminal prosecution before the court of an armed group in a conflict zone will necessarily correspond to different standards reflecting the institution, the parties, the law and the context.

Heffes in his book offers a list of basic principles that seems largely derived from Article 75 of Additional Protocol I, Article 6 of AP II and Article 14 of the International Covenant on Civil and Political Rights. I have carried out a similar exercise with respect to the administration of justice in rebel courts more broadly, and while I might diverge in some of the details of what standards govern detention by armed groups, I fully agree that this is an important and neglected conversation that must include academics, States, humanitarian actors and also armed groups themselves. As Heffes notes, we have not articulated clear demands under law in this respect, so it is not surprising that the practice of NSAGs to a large extent does not yet reflect the proposed list of minimum standards.

Tilman Rodenhäuser: Honestly, I am in two minds about the proposal. Heffes must be commended for thinking about how to turn his strong analysis of international law and practice into something that can be implemented by NSAGs or used by humanitarian actors that engage with these groups.[15] The "basic principles" that Heffes sets out are useful; in fact, many of them reflect long-standing rules of IHL or legal policy proposals by humanitarian organizations, such as the ICRC, which should be "disseminated" among NSAGs.[16] In the set of principles presented by Heffes, this applies in particular to principles 1–8, which address criminal law detention and internment. However, drawing up a practical list of "basic principles" also comes with dilemmas. I do not have the solution to them, and I am sure Heffes did balance the advantages and disadvantages that he saw, but I think it is worth flagging two.

Firstly, given that some parts of IHL rules on the protection of detainees in NIACs, in particular on grounds and procedures for internment, are not sufficiently elaborate in all aspects, drawing up a list of relevant principles will likely combine law and policy. The downside is, however, that Heffes does not clarify which of the "basic principles" in his list reflect law – and a number of them do – and which reflect standards commonly used in operations but that are not legally binding. No doubt, from a humanitarian point of view, all of them "should" be followed, and one may argue that for some groups, it does not make a difference

15 For a set of rules contained in a "pocket card" on "The Treatment of Detainees" that was recently produced by the ICRC, see: https://shop.icrc.org/treatment-of-detainees-print-en.html.

16 See, in particular, Jelena Pejic, "Procedural Principles and Safeguards for Internment/Administrative Detention in Armed Conflict and Other Situations of Violence", *International Review of the Red Cross*, Vol. 87, No. 858, 2005.

what the source of each principle is. But from a legal point of view, it is very important to know which ones "must" be complied with, including violations of which ones amount to war crimes.

Secondly, whenever we aim to be concise and present a short list of principles, we almost inevitably omit others. When I look at the list produced by Heffes, I would have, for example, recommended being more explicit on the IHL obligations on the treatment of detainees, such as the prohibition of torture and other forms of ill-treatment (I am sure Heffes subsumes that under the imperative of humane treatment). In reality, this is a huge challenge seen by ICRC delegates in too many places of detention, be they run by State or non-State parties to armed conflicts; and legally, this is one of the most fundamental rules on the protection of detainees. Similarly, I would have expected to see an explicit requirement to record the personal details of detainees, which is a legal obligation of all Detaining Powers and is significantly important for preventing disappearances.[17] Instead, Heffes includes the requirement to hold detainees in "recognized places of detention", which raises the question of what such a "recognized place of detention" is when we consider detention by NSAGs, not all of which hold detainees in official places of detention.

Katharine Fortin: I think there is a lot of value in identifying a set of principles like this, and I notice that there is considerable overlap between these principles and the overview of detention rules presented in the recent ICRC report *Detention by Non-State Armed Groups*.[18] However, when I read a set of principles like this I immediately start thinking about what has been left out, especially when the principles are quite detailed but also quite short. I notice, for example, that Article 9 says that detainees shall be provided with floor space, food, drinking water, clothing and adequate measures of health and hygiene, but it says nothing about shelter or the need for the location of the detention to be far from the combat zone (provisions found in AP II and the commentary to common Article 3). Likewise, principles 7 and 8 pertain to fair trial rules, but list only some of them; the right to examine witnesses and the right to a public judgment, for example, are left out. Noticing these small omissions makes me curious about the exact basis on which these principles have been drafted, especially considering that some of the principles – for example, those on the conditions on detention – do not emerge from the research in the book itself, which does not explicitly focus on this legal aspect.

As for the question of whether these principles can be observed in the practice of NSAGs, the book makes clear that the answer will never be "yes" or "no". There are many examples of some of these rules being violated by armed groups, but examples can also be found of measures taken by armed groups to comply with some of these rules. The ICRC report just mentioned is particularly informative in that respect, as it provides details of measures taken by different

17 See AP II, Art. 5(2)(b); ICRC Customary Law Study, above note 6, Rule 123.
18 ICRC, above note 5.

armed groups to fulfil some of these obligations and prevent, oversee and punish their violation.

Which of the book's chapters or arguments did you find most illuminating, and why?

René Provost: The argument in the book is very well researched and presented, so I find it difficult to identify one chapter or argument that is more illuminating than the whole. I would simply offer two thoughts. First, as noted in the first question, Heffes makes a clear and compelling argument that it must be accepted under international law that detention can be grounded in the law of NSAGs. It is important to challenge the necessary association of law and the State in order to broaden our notion of legal normativity; if we do not do so, we deprive ourselves of the tools necessary to effectively speak to the behaviour of armed groups when they detain individuals, in order to avoid the risk that any possible critique of rebel detention practices will be reduced to the blanket condemnation of such detention.

The second point is a methodological one. Heffes has made an effort to ground the legal analysis offered in the book in a series of specific case studies assessing the detention practice of armed groups, including an analysis of the legal standards invoked by these groups in justifying and regulating detention. This is a new model for research in international law, integrating some dimensions of ethnography that have been central to sister disciplines like sociology and anthropology for a very long time. Reading the book, one feels that the rubber hits road when the somewhat abstract legal analysis meets the harsh reality of armed hostilities. After all, as humanitarian lawyers, we aim first and foremost to improve protection on the ground for victims of war. Too often academic writing in the field remains, as it were, "academic" – that is, disconnected from the reality of implementation. I might have suggested to Heffes that he incorporate these case studies much earlier in the book so that they could inform the analysis in real time, but the key point is to make the connection to reality on the (battle)ground.

Katharine Fortin: All the chapters of the book are very illuminating, so it is hard to pick one. I think the most illuminating chapter is the one that contains the case studies, because it sheds important light on armed group practice through the interviews conducted by the author. So many international law monographs employ purely desk-based research, so the interviews that Heffes conducts need to be commended. They provide vital and fascinating insights into armed groups' detention practices, procedures and motivations, showing also how these change over time. We need more research like this!

The analysis in this chapter supports the adoption of a typology of "detainees" for armed groups that is based on practice. It also sheds light on how the various groups see and use the various legal frameworks – that is, international law and their own laws. It shows that armed group practice is far from uniform in this regard, and may be difficult to predict. An example is seen

in the different ways in which different non-State armed groups treat captured fighters, with the less organized among them using the term "prisoner of war".

Mariana Chacón Lozano: Rather than a specific chapter, I was very drawn towards the argumentative connections made between the position of NSAGs in international law and the concept of "legal combative pluralism" to assert that NSAGs' own "laws" can be considered as the legal basis for their actions in order to fulfil the requirements imposed by IHL not only in criminal law procedures but also in other instances. While I find this approach bold and innovative, I do see some concerns.

As an operational legal adviser in Colombia, I can directly see how the issues developed by Heffes in this book are extremely relevant for our humanitarian work. The ICRC in Colombia has direct dialogue with all NSAGs classified as party to the seven NIACs in the country,[19] as well as with other armed groups. As all the NSAGs conduct detention activities, both criminal and internment, the ICRC does use IHL to convey messages on a case-by-case basis regarding respect of IHL obligations on humane treatment and conditions of detention. It is true that discussions about procedural safeguards are more challenging than the topics already mentioned; however, they do occur in cases where trust is stronger and such discussions are appropriate in the context of our dialogue.

As none of the five NSAGs have "recognized places of detention", this dialogue is often conducted during field visits and when people are released from armed group detention, where the ICRC acts as a neutral intermediary between parties and receives people detained by NSAGs in order to bring them back to their families. The detainees can be civilians, members of other NSAGs or members of the State security forces. In 2021, the ICRC facilitated twenty-seven unilateral releases; in 2022 the figure was sixty-three,[20] and over fifty have taken place during 2023.

While I will not touch upon the lawfulness of the types of detention conducted by NSAGs in Colombia, and nor do these figures mean that the overall humanitarian situation in Colombia has improved, it is true that releases have increased during the last year. I believe this is in part due to the moral, political and legal incentives presented by the Total Peace policy[21] launched by the government of Colombia one year ago: NSAGs are often keen to show their willingness to be part of such processes through these types of "peace gestures", which are sometimes publicized by them. In this sense, when an NSAG issues a

19 See above note 12.

20 ICRC, "Liberaciones: Un reflejo de la intermediación neutral", available at: www.icrc.org/es/document/colombia-liberaciones-un-reflejo-de-la-intermediacion-neutral-2023.

21 "On August 7, 2022 newly inaugurated President Gustavo Petro announced that he would be implementing a total peace effort to end violence in Colombia. The Total Peace policy is a multifaceted effort that seeks to minimize violence, protect civilians and dismantle the many armed groups operating in Colombia". See WOLA, "What Exactly is Colombia's Total Peace Effort and How Is It Advancing?", available at: www.wola.org/events/what-exactly-colombias-total-peace-effort-how-advancing/. Petro's administration seeks to do this simultaneously with all armed groups.

public declaration about a release, whether during the release or after it's completed, they often do refer to IHL and how they abide by it.

I mention this because I found it very interesting that the author considers that "NSAGs do not rely on IHL to deprive individuals of their liberty, including cases that given their nature could be considered as internments".[22] Perhaps a look at unilateral or bilateral releases of detainees would shed additional light on whether NSAGs do or do not rely on IHL for their detention practices; in fact, in our experience NSAGs regularly consider at least the detention of soldiers and members of the adversary as part of an armed conflict, not unlawful, and not regulated by criminal law.

Are there any issues – legal, political, social – that the book fails to capture, or that fall beyond its scope? What should future research in this area focus on?

Katharine Fortin: The book is very thorough and does an excellent job at providing a policy-oriented examination of detention by armed groups. In that sense, it fulfils its ambition and actually does a better job than many studies at dealing with the legal, political and social dimensions. It does raise several interesting questions that could be explored in future studies. One question is the need for a better understanding of "what is law" when we are talking about armed groups. I realize that there is an irony in me advocating for such a legalistic enquiry, when as a scholar I have written quite a lot about the importance of getting away from this question. But I am curious to know more about the different ways in which armed groups create laws, and also more about what the law demands of these processes. I also think it could be valuable to complement the top-down empirical research that Ezequiel has done – questioning armed group officials – with more bottom-up empirical research. This would involve interviewing civilians and (prior) detainees about their knowledge of the laws that were apparently in force in these areas, giving an insight into whether those laws were known, whether they were meaningful and whether they were enforced, but from a civilian/ detainee perspective.

Lastly, it strikes me as interesting that in the last few years, there have been at least four monograph-length studies on detention in armed conflict, several monographs on the right to life and several on the right to a fair trial. All of these studies are vastly valuable. Clearly, the rather intense scholarly focus on these issues reflects the importance of the rights at stake and the complexity of the legal issues that they involve, including the relationship between IHL and human rights law. However, I sometimes wonder why we do not have more studies on other issues that involve less dramatically disruptive legal circumstances than detention, trial or death, but which are also fundamentally important to people's lives and also involve complex legal issues. I'm thinking for example about issues such as freedom of movement, birth registration, education, health care, taxation, mental health or family life. Seeing as protractedness is increasingly a characteristic of armed conflicts, I think it's important that these

22 *Detention by Non-State Armed Groups under International Law*, pp. 228, 244.

kinds of issues pertaining to people's everyday lived experience will get more attention in the coming years.

Tilman Rodenhäuser: In my view, Heffes' book has focused on one of the legally most interesting – and challenging – questions with regard to detention by NSAGs – namely, in Heffes' words, "How does international law deal with NSAGs' detention activities, and what is the value of their 'laws' for regulating these same activities?" The question is posed in a broad manner, but Heffes' analysis is primarily focused on the "lawfulness" of such detention. Can detention by NSAGs ever be lawful, and if so, under what conditions? If we consider Heffes' book together with other excellent academic publications on this subject by Jelena Plamenac (focused on "internment", meaning security detention) and René Provost (focused on "fair trials", meaning criminal detention), as well as the ICRC study *Detention by Non-State Armed Groups*[23] (which looks at rules on the treatment of detainees, their conditions of detention, and procedural questions), we see that in recent years a significant number of legal questions have been analyzed, including on where existing rules of IHL might not be sufficiently elaborate.

In my view – and this is an issue that is of course not limited to detention by NSAGs – our focus should turn to building a better understanding of the law. This must happen at multiple levels. Most importantly, continued investment is needed by States as well as humanitarian organizations and academia to ensure that NSAGs know their legal obligations, implement them, and take steps to alleviate the suffering of detainees. I would argue that the law is clear on the vast majority of questions: no torture, no sexual violence, the obligation to provide shelter, food, water, health care, among others. Many NSAGs have integrated these obligations into their internal rules and have taken practical steps to implement them. We have many examples – we must make additional efforts to make them known and implemented.

To pass clear operational messages to NSAGs, however, academia, humanitarian organizations and human rights organizations should work towards a common understanding of how international law applies to NSAGs. This is especially important for actors that have influence, operationally and in the policy field. For example, while experts look at the issue of "NSAG detention" from different perspectives, from the point of view of a lawyer working primarily on situations of armed conflict, it is surprising to hear claims that NSAGs cannot conduct trials in accordance with international law, disregarding the IHL framework as presented by Heffes and others and applying human rights law jurisprudence instead. And even on issues on which different legal and operational experts can have diverging views, such as on the question of which "grounds and procedures" must be followed by NSAGs when they detain people in the context of an armed conflict, all actors will agree that detaining people for months or years without any legal safeguards is unlawful. And this message is essential, too.

23 ICRC, above note 5.

René Provost: Upon concluding my reading of the book, I was not left with the impression that there were particular legal, political or social issues that had been neglected by Heffes in framing and making his argument. If there is a conceptual elephant in the room, it relates to data. One of the central challenges for a study on detention by NSAGs, like much else that is related to the practice of such groups, is the paucity of available information: we literally don't know what we are talking about, or we know relatively little. Heffes readily acknowledges this limitation, and works within the confines of what is known in general about detention activities of armed groups and, in relation to the three case studies, what he was able to unearth. If the reflection in international law on rebel governance is to become more sophisticated, there must be a concerted effort to produce and analyze a much more fine-grained understanding of insurgent practice. Of course, there are significant obstacles to such an endeavour. The first is a simple lack of attention or interest on the part of international lawyers, something that books like this one can contribute to remedying. The second and more daunting obstacle is that information on rebel practice is very difficult to obtain: armed groups tend to operate away from the public eye for obvious reasons of security given the common military superiority of the State's armed forces, and war zones are an environment that is broadly inimical to ethnographic research. It is not completely impossible to carry out fieldwork in conflict areas, but it is dangerous and difficult. Heffes' book was initially a doctoral dissertation, and one can easily imagine that universities would be unwilling to send their students to war zones to gather materials for their theses. The ICRC, along with some other organizations, has continuous and privileged access to many armed groups, but legitimate concerns of neutrality and impartiality mean that it is not sharing the information that it is no doubt gathering. Geneva Call, for which Heffes worked for several years, has been able to combine engagement with armed groups and a degree of publicity for its findings on their practice. Future research of the kind offered in this book will hopefully be able to mine an ever-increasing body of information on rebel governance that can offer deeper and surer footing for legal analysis.

International Review of the Red Cross (2023), **105** (924), 1690–1728.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000413

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Above the law: Drones, aerial vision and the law of armed conflict – a socio-technical approach

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* This article was awarded the David D. Caron Research Prize by the American Society of International Law in 2021. Research for this article was funded by the Australian government through the Australian Research Council (DE230101646), as well as the Alexander Von Humboldt Foundation. I would like to thank David Engstrom, Deborah Hensler, Allen Weiner, Jacob Goldin, Patrick Emerton, John Morss and Anne van Aaken for their valuable comments on earlier drafts. I am also grateful for insights and suggestions I received from participants of the American Society of International Law Annual Meeting (2022), the Stanford International Junior Faculty Forum (2021), the Lieber Unplugged session at the Lieber Institute for Law and Land Warfare, West Point (2022), the Hamburg University Behavioural Approaches in International Law Workshop (2021), the Melbourne University Legal Theory Workshop (2022), the New Technologies on the Global Battlespace Conference at the University of Queensland Law and the Future of War Research Group (2022), and the International Law Forum at the Hebrew University of Jerusalem Faculty of Law (2022).

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Abstract

Aerial visuals play a central – and increasing – role in military operations, informing military decision-makers in real time. While adding relevant and time-sensitive information, these visuals construct an imperfect representation of people and spaces, placing additional burdens on decision-makers and creating a persuasive – yet misleading – virtual representation of the actual conditions on the ground. Based on interdisciplinary analysis of critical security studies, behavioural economics and international law literature, as well as rich data from US and Israeli military investigations into four military operations spanning from 2009 to 2021, this article identifies three types of challenges stemming from the mounting reliance on aerial visuals to inform military operations: technical challenges, relating to the technical capabilities and features of aerial vision technologies; cognitive challenges, relating to decision-making biases affecting human decision-makers; and human-technological challenges, relating to the human–machine interaction itself. The article suggests ways to mitigate these challenges, improve the application of the law of armed conflict, and protect people, animals and the environment during armed conflicts.

Keywords: drones, IHL, military technology, human-machine interaction, fact-finding, cognitive bias, aerial vision.

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Out of three or four in a room
One is always standing at the window.
Forced to see the injustice among the thorns,
The fires on the Hill.
And people who left whole
Are brought home in the evening, like small change.

Yehuda Amichai[1]

Introduction

On 29 August 2021, US forces launched a drone strike near Kabul's international airport, killing ten people. The strike targeted a white Toyota Corolla believed to be carrying a bomb to be used by the so-called Islamic State of Iraq and Syria (ISIS) for a planned terror attack against US forces at the airport. In the aftermath of the attack, it became clear that the car had no connection to any terror activity and that all casualties were civilians, seven of them children. A military investigation suggested that the tragic outcome resulted from a wrongful interpretation of the intelligence, which included eight hours of drone visuals.[2]

1 Yehuda Amichai, *Poems of Jerusalem and Love Poems*, trans. Assia Gutmann, Sheep Meadow Press, New York, 1988, p. 15.

2 US Department of Defense (DoD), "Pentagon Press Secretary John F. Kirby and Air Force Lt. Gen. Sami D. Said Hold a Press Briefing", 3 November 2021, available at: www.defense.gov/News/Transcripts/Transcript/Article/2832634/pentagon-press-secretary-john-f-kirby-and-air-force-lt-gen-sami-d-said-hold-a-p/ (all internet references were accessed in September 2023).

On 16 July 2014, during a large-scale military operation in Gaza, Israeli forces attacked several figures who were identified by drone operators as Hamas operatives. Following the attack, however, it was revealed that the figures were all young children. Four children were killed in the attack, and four other children were injured. An Israeli military investigation attributed the identification error to misinterpretation of the drone visuals which triggered the attack.[3]

These examples represent a broader phenomenon of mounting reliance on real-time aerial visuals in military decision-making. Advanced drone (and other aerial visualization) technologies produce volumes of information, including both static imagery and real-time video generated through various sensors.[4] These visuals inform military risk assessments and support decisions concerning the legality of planned operations.[5] The rise in complex human–machine interaction in the legal evaluation of military operations is fuelled by the assumption that military technologies, including aerial visuals, provide immediate, accurate and timely information that informs decision-makers.[6] Accordingly, legal scholarship on military technologies tends to place the technology at the centre, debating its legality and legal implications and considering the need for a new regulatory regime or a fresh interpretation of existing norms.[7]

While these discussions are indeed valuable, the focus on the technology *per se* leaves out challenges that stem from the human–machine interaction. In the above examples (as well as in the additional case studies examined below), the armed forces of the United States and Israel each acknowledged fatal attacks on

3 Preliminary Response from the State in Israeli High Court of Justice (HCJ), *Bakr et al. v. Military Judge Advocate et al.*, HCJ 8008/20, 2021 (State Response), p. 5, available (in Hebrew) at: www.adalah.org/uploads/uploads/Bakr_state_response_250221.pdf.

4 John Michael Peschel and Robin Roberson Murphy, "On the Human–Machine Interaction of Unmanned Aerial System Mission Specialists", *IEEE Transactions on Human–Machine Systems*, Vol. 43, No. 1, 2012, pp. 53, 59.

5 Benjamin Johnson, "Coded Conflict: Algorithmic and Drone Warfare in U.S. Security Strategy", *Journal of Military and Strategic Studies*, Vol. 18, No. 4, 2018, p. 35; Lucy Suchman, Karolina Follis and Jutta Weber, "Tracking and Targeting: Sociotechnologies of (In)Security", *Science, Technology and Human Values*, Vol. 42, No. 6, 2017; Jutta Weber, "Keep Adding: On Kill Lists, Drone Warfare and the Politics of Databases", *Environment and Planning D: Society and Space*, Vol. 43, No. 1, 2016.

6 Michael N. Schmitt, "Precision Attack and International Humanitarian Law", *International Review of the Red Cross*, Vol. 87, No. 859, 2005. See, also, more generally, Michael Barnes and Florian Jentsch (eds), *Human–Robot Interactions in Future Military Operations*, Routledge, London, 2010; Celestine Ntuen, Eui H. Park and Gwang-Myung Kim, "Designing an Information Visualization Tool for Sensemaking", *International Journal of Human-Computer Interaction*, Vol. 26, No. 2–3, 2010. Derek Gregory has reviewed and criticized this claim: Derek Gregory, "From a View to a Kill: Drones and Late Modern War", *Theory, Culture and Society*, Vol. 28, No. 7–8, 2011, p. 188.

7 See, for example, Michael J Boyle, "The Legal and Ethical Implications of Drone Warfare", *International Journal of Human Rights*, Vol. 19, No. 2, 2015; John Lewis, "The Case for Regulating Fully Autonomous Weapons", *Yale Law Journal*, Vol. 124, No. 4, 2014, p. 1309; Hitoshi Nasu and Robert McLaughlin (eds), *New Technologies and the Law of Armed Conflict*, Springer, 2014; Rebecca Crootof, "War Torts: Accountability for Autonomous Weapons", *University of Pennsylvania Law Review*, Vol. 164, No. 6, 2015; Armin Krishnan, *Killer Robots: Legality and Ethicality of Autonomous Weapons*, Routledge, London, 2016; Michael N. Schmitt and Jeffrey S. Thurnher, "Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict", *Harvard National Security Journal*, Vol. 4, 2013.

civilians in which misinterpretation of aerial visuals was identified as one of the causes – if not the only cause – leading to the tragic outcomes. In its 2022 civilian harm mitigation plan, the US Department of Defense (DoD) acknowledged the possible links between aerial visuals and cognitive biases, instructing military departments and defence intelligence organizations to "review technical training for imagery analysts and intelligence professionals" as a part of the techniques required to mitigate cognitive biases in military decision-making.[8] While this evidence is anecdotal, it nonetheless suggests that parallel to their advantages, reliance on aerial visuals may also lead to military errors and to unintended outcomes. This evidence is further supported by emerging literature exploring human–machine interaction and technology-assisted decision-making ("humans in the loop") in several contexts,[9] including in military decision-making.[10] This emerging literature, however, has thus far focused mainly on technologies such as artificial intelligence, or on various socio-technical elements in the construction and implications of drone programs, leaving the unique problems of human–machine interaction as it relates to the use of aerial visuals in critical military decision-making processes largely under-explored.

This article fills some of this gap by examining how aerial vision technologies shape military fact-finding processes and the application of the law of armed conflict. Based on data from and analysis of four military

8 DoD, "Civilian Harm Mitigation and Response Action Plan (CHMR-AP)", Memorandum from the Secretary of Defence to Senior Pentagon Leadership, Commanders of the Combatant Commands, Defence Agency and DoD Field Activity Directors, 25 August 2022, available at: https://media.defense.gov/2022/Aug/25/2003064740/-1/-1/1/CIVILIAN-HARM-MITIGATION-AND-RESPONSE-ACTION-PLAN.PDF.

9 See, generally, Guy A. Boy (ed.), *The Handbook of Human–Machine Interaction: A Human-Centered Design Approach*, Routledge, London, 2017. On human–machine interaction in the context of criminal detentions, see Nina Grgić-Hlača, Christoph Engel and Krishna P. Gummadi, "Human Decision Making with Machine Assistance: An Experiment on Bailing and Jailing", *Proceedings of the ACM on Human Computer Interaction*, Vol. 3, No. CSCW, 2019. In the context of refugee protection, see Fleur Johns, "Data, Detection, and the Redistribution of the Sensible in International Law", *American Journal of International Law*, Vol. 111, No. 1, 2017. In the context of border security, see Dimitri Van Den Meerssche, "Virtual Borders: International Law and the Elusive Inequalities of Algorithmic Association", *European Journal of International Law* Vol. 33, No. 1, 2022. In the context of aviation, see Jordan Navarro, "Human–Machine Interaction Theories and Lane Departure Warnings", *Theoretical Issues in Ergonomics Science*, Vol. 18, No. 6, 2017.

10 In particular, Crootof, Kaminski and Nicholson Price have focused on the interaction of humans with artificially intelligent algorithms: Rebecca Crootof, Margot E. Kaminski and W. Nicholson Price II, "Humans in the Loop", *Vanderbilt Law Review*, Vol. 76, No. 2, 2023. Unpacking the techno-legal machinery of drone programmes, Mignot-Mahdavi demonstrates how drone technologies (beyond aerial vision) extend warfare in time and space and exacerbate State power. Rebecca Mignot–Mahdavi, *Drones and International Law: A Techno-legal Machinery*, Cambridge University Press, Cambridge, 2023, pp. 9, 15, 110. Additionally, Leander highlights the technological agency of drones, focusing on how drone practices redraw the boundaries of legal expertise. Anna Leander, "Technological Agency in the Co-constitution of Legal Expertise and the US Drone Program", *Leiden Journal of International Law*, Vol. 26, No. 4, 2013. See also J. M. Peschel and R. R. Murphy, above note 4; Shiri Krebs, "Predictive Technologies and Opaque Epistemology in Counter-Terrorism Decision-Making", in Kim L. Scheppele and Arianna Vedaschi (eds), *9/11 and the Rise of Global Anti-Terrorism Law*, Cambridge University Press, Cambridge, 2021.

investigations,[11] as well as interdisciplinary analysis of existing literature in critical security studies, behavioural economics and international law, the article identifies existing challenges relating to the interpretation and construction of aerial visuals in military decision-making and knowledge production processes. I argue that while adding valuable information, drone sensors and aerial visualization technologies place additional burdens on decision-makers that may hinder – rather than improve – time-sensitive and stressful military decision-making processes. As will be detailed below, these decision-making hurdles include technical, cognitive and human-technical challenges. The technical challenges concern the features, capabilities and blind spots of aerial vision technologies (for example, the scope of the visualization, the ability to reflect colour and sound, and the possibility of malfunction). The cognitive challenges relate to decision-making biases, such as confirmation bias, which may lead to misinterpretation of aerial visuals. The human-technical challenges concern the human–machine interaction itself, which may lead to human de-skilling and trigger technology-specific biases such as automation bias. A result of these challenges, which decision-makers are not always aware of, is the creation of avatars that replace the real persons – or the actual conditions – on the ground, with no effective way to refute these virtual representations.[12]

To clarify, my claim is not that military decision-making processes are better or more accurate without the aid of aerial visuals. These visuals indeed provide a large amount of essential information about the battlefield, target identification and the presence of civilians in the range of fire. The argument, instead, is that the benefits of aerial visuals can easily mask their blind spots: aerial visuals are imperfect and limited in several ways – much like other ways of seeing and sensing – and these limitations are often invisible to decision-makers. Hence, the article does not suggest that aerial visuals should not be utilized, but rather that their utilization can – and should – be significantly improved.

The article begins with the identification of technical, cognitive and human-technical factors affecting the utilization of aerial visuals in military decision-making processes. It then examines four military operations conducted by the US and Israeli militaries, where aerial visuals were identified as central to the erroneous targeting of civilians. The analysis of the four operations applies the interdisciplinary theoretical framework developed in the second part of the article to the circumstances and findings in these four cases. Based on the evidence from the four cases, the article goes on to explore how aerial visuals shape the application of core

11 This article provides a detailed analysis of four military operations conducted by the US and Israeli militaries, each demonstrating some of the decision-making challenges relating to reliance on aerial visuals. The cases were selected based on the release of information from the military investigations conducted after each operation, taking into account military findings relating to the concrete decision-making errors in each case, and the sources or causes for these errors. The case selection is also intended to reflect decision-making processes from two militaries which rely heavily on drone technologies and real-time aerial visuals, as well as time frame concerns (aiming to discuss the most recent cases where information from the related military investigations was released). While this approach generates anecdotal evidence, it exemplifies actual decision-making processes where human–machine interaction was central, illuminating existing problems that can – and have – occurred.

12 Margaret Hu, "Big Data Blacklisting", *Florida Law Review*, Vol. 67, No. 5, 2015.

legal principles such as those of distinction, proportionality and precaution. Finally, the article points toward possible directions for mitigating these challenges and improving the utilization of aerial visuals in military decision-making. The proposed recommendations include increasing the transparency of aerial vision's scope and limitations, highlighting disagreements concerning data interpretations, enhancing the saliency of non-visual data points and developing effective trainings for military decision-makers designed to improve human–machine interactions. Such trainings can advance decision-makers' knowledge of the blind spots and (human-)technical limitations of aerial visuals, the potential dehumanizing effects of aerial vision, and the cognitive biases it may trigger.

Aerial visuals in military decision-making

A view from above

In recent decades, and particularly with the development of drone technologies, aerial visuals have become central to military decision-making generally and to real-time operational decision-making in particular.[13] These visuals are generated by various military technologies producing a range of outputs, from static imagery and infrared visualization to real-time video.[14] Developments in military technologies, and the increase in decision-assisting visuals, have led to the creation of new military roles and responsibilities such as mission specialists who are responsible for visual investigation and recording, data collection, and imagery analysis.[15]

Despite these rapid technological developments,[16] access to aerial views of war actions and war actors is not new. Long before the development of predator military drones, aerial visuals and aerial vision were at the centre of modern military strategy and target development.[17] In particular, aerial visuals have been a core element in military knowledge production, often romanticized as an expression of technological superiority, objectivity, and control.[18] The vertical gaze from above is therefore not a new development within (or outside) the military technologies of vision or within military epistemologies and knowledge

13 See, among others, Noel Sharkey, "The Automation and Proliferation of Military Drones and the Protection of Civilians", *Law, Innovation and Technology*, Vol. 3, No. 2, 2011, p. 229; L. Suchman, K. Follis and J. Weber, above note 5; J. Weber, above note 5.

14 J. M. Peschel and R. R. Murphy, above note 4, p. 59.

15 *Ibid.*, p. 59.

16 Mohamed Emimi, Mohamed Khaleel and Abobakr Alkrash, "The Current Opportunities and Challenges in Drone Technology", *International Journal of Electrical Engineering and Sustainability*, Vol. 1, No. 3, 2023.

17 Peter Adey, Mark Whitehead and Alison J. Williams, "Introduction: Air-Target: Distance, Reach and the Politics of Verticality", *Theory, Culture and Society*, Vol. 28, No. 7–8, 2011, p. 175. Similarly, as Amad notes, "the aerial view existed before the airplane gave it objective substance": Paula Amad, "From God's-Eye to Camera-Eye: Aerial Photography's Post-humanist and Neo-Humanist Visions of the World", *History of Photography*, Vol. 36, No. 1, 2012, p. 67.

18 Tyler Wall and Torin Monahan, "Surveillance and Violence from Afar: The Politics of Drones and Liminal Security-Scapes", *Theoretical Criminology*, Vol. 15, No. 3, 2011, p. 240.

production practices more broadly.[19] Reviewing the history – and critiques – of aerial photography in Western thought and philosophy, Amad demonstrates how "the aerial gaze was represented, dreamed of, experimented with and experienced vicariously before it was realised in the coming together of airplanes and cameras with the beginning of military aviation in 1909".[20] She further documents how planes and aerial vision were transformed throughout the 20th century into "major modern symbols of technological progress, superhuman achievement, borderless internationalism, and boundary-defying experience".[21]

This romanticism of the aerial view as an advanced and objective source of military superiority has garnered much criticism. Contemporary critiques of this so-called "disembodied" God-view expose its subjective (or situated) elements and dehumanizing effects.[22] Not focusing directly on aerial visuals, Foucault has challenged the proclaimed neutrality of technologies more broadly, shedding light on the power relations they embody.[23] Following Foucault, Butler highlights the effects of the aerial view in war, asserting that the visual record of war (through the conflation of the television screen and the lens of the bomber pilot) is not a reflection on the war, but rather a part of the very means by which war is socially constituted. Within this context, asserts Butler, the aerial view has a distinct role in manufacturing and maintaining the distance between military actors – and society as a whole – and the destructive effects of military actions.[24] This distance further exacerbates dehumanization in war, as it abstracts people from contexts, details, individuality and ambiguities.[25] Haraway further unmasks how technologies of vision mediate the world, shaping how we see, where we see from, what are the limits of our vision and the aims that direct our vision, and who interprets the visual field.[26] By repositioning the "view from above, from nowhere, from simplicity",[27] Haraway promotes responsibility for military actions, because "positioning implies responsibility for our enabling practices".[28] Following Scott's influential book *Seeing Like a State* (a view that involves "a narrowing of vision"),[29] Gregory unpacks the elements or features of "seeing like a military", exposing how military technologies shape (and narrow) military vision.[30] A part of this

19 P. Adey, M. Whitehead and A. J. Williams, above note 17, pp. 176–177. Outside the military context, Amad notes that "the abstract potentialities of aerial vision have long been associated with modernist perspectives within painting, criticism and photography": P. Amad, above note 17, p. 67.
20 P. Amad, above note 17, p. 68.
21 *Ibid.*, p. 71.
22 Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective", *Feminist Studies*, Vol. 14, No. 3, 1988, p. 582.
23 Michael C. Behrent, "Foucault and Technology", *History and Technology*, Vol. 29, No. 1, 2013, p. 55.
24 Judith Butler, "Contingent Foundations: Feminism and the Question of 'Postmodernism'", in Judith Butler and Joan W. Scott (eds), *Feminists Theorize the Political*, Routledge, New York, 1992, pp. 3, 11.
25 T. Wall and T. Monahan, above note 18, p. 240.
26 D. Haraway, above note 22, p. 587.
27 *Ibid.*, p. 589.
28 *Ibid.*, p. 587.
29 James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*, Yale University Press, New Haven, CT, 1999.
30 Derek Gregory, "Kunduz and 'Seeing Like a Military'", *Geographical Imaginations*, 2 January 2014, available at: https://geographicalimaginations.com/tag/garani-air-strike/.

narrowing, Gregory argues, is the geography of militarized vision: different participants (or viewers) see different things depending on their physical – but also cultural and political – positions.[31]

This last point paves the way for a deeper exploration of the synergies between critiques of military technologies and behavioural and cognitive insights concerning human–machine interaction in this space. While critiques of the myth of objectivity or the narrowing gaze generated through military technologies stand on their own, the mechanisms of vision narrowing and subjective interpretation of visuals can be further unpacked and nuanced through behavioural scholarship. In the subsection below I rely on these critiques of military vision as a starting point for identifying the concrete mechanisms that limit (or position) military vision and induce bias in military fact-finding and risk assessment processes, including the legal evaluation of military operations. This general argument will then be demonstrated through four case studies from the United States and Israel.

A view from within

The utopian narrative linking aerial vision with objective and superior knowledge, together with evolving technical capabilities, has led to the notion that aerial visuals improve decision-making processes by providing immediate, accurate, relevant and timely information. Their zooming-in and -out capabilities, simultaneously providing a view of both the macro and the micro, have complemented (if not replaced) traditional forms of information-gathering and knowledge production during stressful and fast-developing situations.[32] While dystopian critiques, linking aerial vision with practices of violence and the exercise of power and control over dehumanized others, have not penetrated military thinking,[33] some studies have begun to examine the technological limitations of visuals in various decision-making contexts. For example, Marusich *et al.* find that an increase in the volume of information – including accurate and task-relevant visuals – is not always beneficial to decision-making performance and may be detrimental to situation awareness and trust among team members.[34] This finding is consistent with the outcomes of several military investigations which have identified technology- (and human-technology-) related factors as the source of erroneous targeting of civilians in concrete military operations (as I shall explore in detail in the next section). While the findings from these studies are very context-specific, they suggest that the advantages supplied by aerial vision may be hampered by suboptimal integration processes and other under-explored technical and human-technical weaknesses.

31 D. Gregory, above note 6; Derek Gregory, "Eyes in the Sky – Bodies on the Ground", *Critical Studies on Security*, Vol. 6, No. 3, 2018.
32 M. Barnes and F. Jentsch, above note 6; C. Ntuen, E. H. Park and G. Kim, above note 6.
33 T. Wall and T. Monahan, above note 18, p. 240.
34 See e.g. Laura R. Marusich *et al.*, "Effects of Information Availability on Command-and-Control Decision Making: Performance, Trust, and Situation Awareness", *Human Factors*, Vol. 58, No. 2, 2016.

Figure 1. The limits of aerial visuals in military decision-making.

Informed by this emerging literature, as well as by the theoretical critiques described above and insights from behavioural economics, I identify technical, cognitive and human-technical factors affecting the use of and reliance on aerial visuals in military decision-making (illustrated in Figure 1). While for analytical purposes these challenges are presented and discussed separately, their effects on concrete decision-making processes are often intertwined, as will be further demonstrated below. Technical limitations create informational gaps that are filled with subjective, and sometimes biased, interpretations. These subjective judgements are further influenced by suboptimal human-technical interactions, as well as by the overarching objectifying gaze of the aerial view. I turn now to elaborate on each of these types of challenges or limitations.

Technical challenges

As stated above, military technologies provide volumes of relevant and timely information that assists decision-makers in real time. However, similarly to human-centred fact-finding methods, these technologies are far from perfect (or objective). This subsection considers some of the technical limitations of aerial visuals, aiming to make these vulnerabilities more pronounced to military decision-makers.

Aerial visuals depicting identified (and unidentified) targets are limited in various ways. First, the sensors utilized to generate aerial visuals are bounded by time and space constraints, depicting only some areas, for a specific period of time. The selected temporal and geographical scope generates affective and salient visual data, but information which exists outside those times and spaces – outside the "frame" – becomes secondary and unseen.

Second, some information gaps stem from the capabilities of the particular technology or sensor used. For example, many strikes target buildings or are conducted at night, under conditions that significantly limit visibility as well as the ability to accurately detect the presence of people in the targeted area. In such conditions, the particular visualization tools used will often signal the presence of human beings using temperature signatures picked up by infrared

sensors.[35] Moreover, the capability of infrared sensors to generate visuals in limited lighting conditions comes at the expense of other information, such as colour. Colour detection has particular significance during armed conflict, as it allows the attacking forces to identify medical facilities, which are marked using colour coding (i.e., the red cross symbol). In addition to sensor selection and limitations, visual sensors are not always combined with audio capabilities that can influence the interpretation and effect of the visuals. Whether outside of the visuals' scope or redacted through the selected lens, some data is not included in the outputs provided to decision-makers, thus creating an impactful – yet incomplete – visual of the area that produces a false impression on its viewer. The missing information remains invisible, while the visible (yet limited or partial) outputs are salient and capture decision-makers' attention.

Third, aerial visualization technologies may fail or malfunction, generating flawed or misleading streams of information and intensifying gaps in the factual framework. When military practices rely profoundly on technology systems, decision-makers' own judgement, and their ability to evaluate evolving situations without the technology, erodes.

I will demonstrate the effects of each of these limitations through data gathered from concrete military operations below.

Cognitive challenges

Despite common beliefs to the contrary, visuals do not speak for themselves. Much like any other source of information, images require some degree of interpretation, whether generated implicitly by cognitive human processes, or configured and automated through artificial intelligence algorithms (which inherently incorporate human input through technology design and training processes). Reliance on aerial visuals is therefore mediated through the operation of cognitive dynamics and biases, as well as the cultural and political lenses of the humans who design the technology, apply it to generate particular information, interpret the images, and communicate that interpretation to other decision-makers.[36] In this subsection I briefly review a few core cognitive biases that are relevant to military decision-making. I will illustrate their operation, providing concrete examples from four military operations, in the following section.

Cognitive biases refer to faulty mental processes that lead decision-makers to make suboptimal decisions which deviate from normative principles.[37] In their influential studies of decision-making biases and heuristics, Kahneman, Slovic and Tversky have grouped these biases under three broad categories:

35 Noel Sharkey, "Automating Warfare: Lessons Learned from the Drones", *Journal of Law, Information and Science*, Vol. 21, No. 2, 2011, p. 152.

36 Tomer Broude, "Behavioral International Law", *University of Pennsylvania Law Review*, Vol. 163, No. 4, 2015.

37 Gilberto Montibeller and Detlof Von Winterfeldt, "Cognitive and Motivational Biases in Decision and Risk Analysis", *Risk Analysis*, Vol. 35, No. 7, 2015.

representativeness, availability and anchoring.[38] Throughout the years, additional types of cognitive biases have been identified, including a variety of motivated cognition biases and framing effects,[39] as well as overconfidence and loss aversion.[40] Van Aaken emphasizes the relevance of these decision-making biases to the application and interpretation of international law generally, and in particular in the context of armed conflicts.[41]

Representativeness biases occur when people make judgements based on how closely an option resembles the problem scenario, in violation of rational laws of probability.[42] Visualization outputs depicting people in zones of active hostilities are interpreted and categorized quickly, based on how well the known characteristics fit existing representations (for example, those created through training scenarios). As a result, representativeness biases may lead to the classification of such people as insurgents when they are in fact civilians.

Availability biases occur when people overstate the likelihood that a certain event will occur because it is easily recalled, or because they can easily retrieve similar examples to mind.[43] In the context of military decision-making, availability biases make decision-makers less sensitive to alternative courses of action or information that runs contrary to their recent experience or other easily recalled information.[44]

Anchoring biases occur when the estimation of a condition is based on an initial value (anchor), which is then insufficiently adjusted to provide the final true condition.[45] The starting point – the anchor – might result from intuition, the framing of the problem or even a guess, but the bias occurs when decision-makers do not adjust sufficiently from this initial anchoring point.[46] Aerial visuals may generate both the initial anchor (which may be inaccurate based on the technical limitations discussed above) and the inaccurate estimation or adjustment from an initial intelligence information or suspicion (as visuals may be wrongly interpreted – or insufficiently adjusted – from an external anchor).

Additionally, in the psychological literature, various cognitive dynamics generating "unwitting selectivity in the acquisition and use of evidence" have

38 Daniel Kahneman, Paul Slovic and Amos Tversky (eds), *Judgement under Uncertainty: Heuristics and Biases*, Cambridge University Press, Cambridge, 1982.

39 Montibeller and Winterfeldt have surveyed various types of risk assessment biases and their main characteristics: G. Montibeller and D. Von Winterfeldt, above note 37, pp. 1233–1234.

40 Eyal Zamir, *Law, Psychology, and Morality: The Role of Loss Aversion*, Oxford University Press, New York, 2015; Pascal Vennesson and Amanda Huan, "The General's Intuition: Overconfidence, Pattern Matching, and the Inchon Landing Decision", *Armed Forces and Society*, Vol. 44, No. 3, 2018; Eta S. Berner and Mark L. Graber, "Overconfidence as a Cause of Diagnostic Error in Medicine", *American Journal of Medicine*, Vol. 121, No. 5, 2008.

41 Anne van Aaken, "Behavioral International Law and Economics", *Harvard International Law Journal*, Vol. 55, No. 2, 2014.

42 R. J. Knighton, "The Psychology of Risk and Its Role in Military Decision-Making", *Defence Studies*, Vol. 4, No. 3, 2004, p. 320.

43 G. Montibeller and D. Von Winterfeldt, above note 37, p. 1233.

44 R. J. Knighton, above note 42, p. 322.

45 Blair S. Williams, "Heuristics and Biases in Military Decision Making", *Military Review*, Vol. 90, No. 5, 2010, pp. 48–50.

46 R. J. Knighton, above note 42, p. 322.

been grouped together under the term "confirmation bias".[47] Confirmation bias refers to people's tendency to seek out and act upon information that confirms their existing beliefs or to interpret information in a way that validates their prior knowledge. As a result, the interpretation of aerial visuals may be skewed based on decision-makers' existing expectations, and this confirmation may then serve as an (inaccurate) anchor for casualty estimates or target identification.[48]

Importantly, these cognitive biases have been found to influence not only lay people, but also experts in professional settings.[49] In particular, Slovic *et al.* found that experts express overconfidence bias, leading to suboptimal risk assessments, and as a result, erroneous decisions.[50] According to their study, experts think they can estimate failure rates with much greater precision than is actually the case.[51] Some common ways in which experts misjudge factual information and associated risks – which are particularly relevant in our context – are failure to consider how human errors influence technological systems and insensitivity to how technological systems function as a whole.[52] Analyzing intelligence failures with regard to Iraqi weapons of mass destruction, Jervis concluded that many of the intelligence community's judgements were stated with overconfidence, assumptions were insufficiently examined, and assessments were based on previous judgements without carrying forward the uncertainties.[53]

Finally, the cognitive biases referred to in this section are of a general nature, operating in a similar way in any fact-finding context and affecting military decision-making regardless of the specific source of information that decision-makers rely on.[54] But while military organizations have learned to acknowledge subjectivity and biases in human decision-making processes, aerial visuals have largely been considered as an objective solution to these human flaws. Nevertheless, it is important to acknowledge that while providing important and relevant information, aerial visuals do not eliminate the problem of bias and distortion, but rather shift the location and association of the bias into the space of image interpretation.

47 Raymond S. Nickerson, "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises", *Review of General Psychology*, Vol. 2, No. 2, 1998.

48 Cook and Smallman show the prevalence of confirmation bias in military and medical decision-making, including during real-time assessment of available intelligence: Maia B. Cook and Harvey S. Smallman, "Human Factors of the Confirmation Bias in Intelligence Analysis: Decision Support from Graphical Evidence Landscapes", *Human Factors*, Vol. 50, No. 5, 2008.

49 Paul Slovic, Baruch Fischhoff and Sarah Lichtenstein, "Facts and Fears: Understanding Perceived Risk", in Richard C. Schwing and Walter A. Albers (eds), *Societal Risk Assessment: How Safe is Safe Enough?*, Plenum Press, New York and London, 1980. See also Ganesh Sitaraman and David Zionts, "Behavioral War Powers", *New York University Law Review*, Vol. 90, No. 2, 2015, pp. 534–535.

50 P. Slovic, B. Fischhoff, and S. Lichtenstein, above note 49.

51 *Ibid*. See also G. Sitaraman and D. Zionts, above note 49, pp. 534–535.

52 P. Slovic, B. Fischhoff, and S. Lichtenstein, above note 49, p. 187.

53 Robert Jervis, "Reports, Politics, and Intelligence Failures: The Case of Iraq", *Journal of Strategic Studies*, Vol. 29, No. 1, 2006, pp. 3, 14, 22.

54 A few cognitive biases, such as automation biases, are linked directly to aerial visuals and other types of technology-generated data. I focus on this type of bias below.

Human-technical challenges

In addition to the technical and cognitive limitations identified above, reliance on aerial visuals in military decision-making is further compromised through challenges stemming from suboptimal human–machine interaction. In the model I propose, technical limitations are those relating to the scope, capabilities and performance of the technology (and are independent from the humans in the loop). Cognitive limitations relate to biases that affect decision-makers in various settings and are not inherently related to the technology (for example, confirmation bias may skew the interpretation of a drone visual, as well as other types of information). Human-technical limitations highlight problems that are generated or intensified by the interaction of humans and machines. I will elaborate on three such problems: saliency, which is a general cognitive bias (like those presented above) that is intensified by the characteristics of the information medium, in this case aerial visuals; automation, which is a cognitive bias specifically describing the effects of technologies (or automation) on human decision-makers; and objectification, which is linked to the general problem of dehumanization in the context of armed conflicts, describing a particular mechanism of objectification generated through aerial vision.

Human–machine interaction further jeopardizes military decision-making due to the impact of such interaction on human judgement. When human decision-makers get used to trusting the technology to detect threats, instead of exercising their own judgement and skill, it leads to de-skilling or diminished risk assessment capabilities. This means, for example, that when a sensor is damaged, the aircrew (who have been trained to rely on that sensor) may be less capable of exercising human judgement based on other sources of information. Therefore, reliance on aerial visuals (as well as other technologies) to identify threats and to distinguish between legitimate and illegitimate targets may engender a numbing effect on human fact-finding practices, including the exercise of common sense.[55]

Salience and automation

In an environment of complex data sources and high levels of uncertainty, heavy reliance on visuals generates a salience problem, as decision-makers tend to focus their attention on visual data. Emerging empirical evidence suggests that this salience problem may contribute to reduced situational awareness of decision-makers, who tend to focus on visual data. Several studies identify real-time imaging outputs as a contributing factor to reduced situational awareness. For example, Oron-Gilad and Parmet measured the impact of adding a video feed to a display device for utilizing intelligence from an unmanned ground vehicle during a patrol mission, on the quality of the force's decision-making

55 Shiri Krebs, "Predictive Technologies and Opaque Epistemology in Counter-Terrorism Decision-Making", in Kim Lane Scheppele and Arianna Vedaschi (eds), *9/11 and the Rise of Global Anti-Terrorism Law*, Cambridge University Press, Cambridge, 2021, p. 218.

capabilities.[56] The study found that participants in the experimental group were slower to orient themselves and to respond to threats. These participants also reported higher workload, more difficulties in allocating their attention to the environment, and more frustration.[57]

In another study, simulating decision-making under pressure, McGuirl, Sarter and Woods observed that continuously available and easily observable imaging garnered greater trust and attention than other sources of information (which included verbal messages and textual data). They further found that aerial visual data was correlated with poorer decisions, as decision-makers tended to base their decisions on the aerial visualization while ignoring additional available data.[58] Significantly, nearly all of the study participants failed to detect important changes in the situation that were not captured in the imaging but that were available via other, non-visual data sources.[59]

These findings are consistent with the saliency literature. Salience refers to features of stimuli that "draw, grab, or hold attention relative to alternative features".[60] When processing new information, salient features may capture decision-makers' attention, affecting their judgement.[61] Saliency literature has identified the affective role of some visual data (mainly colourful, dynamic and distinctive) in capturing decision-makers' attention.[62] Some features of aerial visuals may intensify the problem of saliency in this context: for example, the zooming-in capability of aerial visuals intensifies their saliency, making it easier for decision-makers to focus on one visible part of the relevant information while failing to give similar weight or attention to other pieces of the intelligence puzzle.

Another cognitive bias directly relating to human–machine interaction is automation bias. Automation bias refers to decision-makers' tendency to place an inappropriately high level of trust in technology-generated data.[63] As a result of this high level of trust, decision-makers may trust technology-generated outputs more than is rational. Skitka, Mosier and Burdick found that decision-makers were more likely to make errors of omission and errors of commission when they

56 Participants in this experiment received a route map and sensor imagery from a vehicle that was a few dozen metres ahead. The experiment compared the participants' performance with and without the sensor imagery. Tal Oron-Gilad and Yisrael Parmet, "Close Target Reconnaissance: A Field Evaluation of Dismounted Soldiers Utilizing Video Feed from an Unmanned Ground Vehicle in Patrol Missions", *Journal of Cognitive Engineering and Decision Making*, Vol. 11, No. 1, 2017.

57 *Ibid.*

58 John McGuirl, Nadine Sarter and David Woods, "Effects of Real-Time Imaging on Decision-Making in a Simulated Incident Command Task", *International Journal of Information Systems for Crisis Response and Management*, Vol. 1, No. 1, 2009, p. 54.

59 *Ibid.*, p. 54.

60 E. Tory Higgins, "Knowledge Activation: Accessibility, Applicability, and Salience", in E. Tory Higgins and Arie W. Kruglanski (eds), *Social Psychology: Handbook of Basic Principles*, Guilford Press, New York, 1996, p. 135.

61 Valerio Santangelo, "Forced to Remember: When Memory is Biased by Salient Information", *Behavioural Brain Research*, Vol. 283, 2015.

62 Shelley E. Taylor, "The Availability Bias in Social Perception and Interaction", in D. Kahneman, P. Slovic and A. Tversky (eds), above note 38, pp. 190, 192.

63 Linda J. Skitka, Kathleen L. Mosier and Mark Burdick, "Does Automation Bias Decision-Making?", *International Journal of Human–Computer Studies*, Vol. 51, No. 5, 1999.

were assisted by automated aids (such as a computer monitoring system).[64] McGuirl, Sarter and Woods' study indicates that decision-makers not only focus on the visual feed, but also place an inappropriately high level of trust in this automated, computer-generated data. As a result of this high level of trust in aerial visualization, McGuirl, Sarter and Woods found that participants exhibited limited cross-checking of various sources of information and narrowed their data search activities.[65] In the context of military targeting decisions, Deeks has pointed out that both a positive target identification and an implicit approval by not alerting that the target is a protected target may involve an automation bias, where individuals accept the machine's explicit or implicit recommendation.[66] Automation bias further jeopardizes decision-making through enhancing decision-makers' overconfidence (or "positive illusions") concerning the data relied upon and decisions made based on this data.[67]

The objectification effect of the aerial view

Aerial visuals are celebrated for infusing critical decision-making processes with objective and accurate information about ground targets and conditions, but as explained above, the particular view they provide cannot be described simply as being either accurate or objective. Indeed, in her critique of the militarist myth of perfect vision (in her words, a "God trick"), Haraway positions the simplicity of the view from above as the opposite of the nuanced, detailed and complex view from a body.[68] The detached view from above enables the exercise of dominance over what (or who) is being observed.[69] During this process, as Gregory points out, the aerial view subverts the truth "by making its objects visible and its subjects invisible".[70] Information generated through the aerial lens therefore lacks necessary complexity, objectifying and dehumanizing those viewed.

Exploring the interaction of the virtual, material and human, Holmqvist observes that drones are political agents which are not simply detecting objects and actions but are rather *producing* those objects and actions.[71] Aerial visuals determine individuals' gender, actions and status (male/female, peaceful/fighter, civilian/combatant), and predict risk (how many bystanders will be killed as a

64 *Ibid.*
65 J. McGuirl, N. Sarter and D. Woods, above note 58, p. 54.
66 Ashley S. Deeks, "Predicting Enemies", *Vanderbilt Law Review*, Vol. 104, No. 8, 2018. See also R. Crootof, M. E. Kaminski and W. Nicholson Price II, above note 10.
67 Jonathan Renshon and Daniel Kahneman, "Hawkish Biases and the Interdisciplinary Study of Conflict Decision-Making", in Steve A. Yetiv and Patrick James (eds), *Advancing Interdisciplinary Approaches to International Relations*, Springer, Cham, 2016, pp. 51, 56.
68 D. Haraway, above note 22, p. 589.
69 Harris describes this view from above as an "imperial gaze": Chad Harris, "The Omniscient Eye: Satellite Imagery, 'Battlespace Awareness,' and the Structures of the Imperial Gaze", *Surveillance and Society*, Vol. 4, No. 1–2, 2006, p. 102.
70 D. Gregory, above note 6, p. 204.
71 Caroline Holmqvist, "Undoing War: War Ontologies and the Materiality of Drone Warfare", *Millennium: Journal of International Studies*, Vol. 41, No. 3, 2013, p. 545; C. Harris, above note 69, p. 102.

result of an attack, how dangerous is the target).[72] Because differences among people may be less detectable from the sky, aerial vision engenders homogenization and dehumanization of those observed and constructed through the aerial view.[73] The lack of nuance, or social context, "renders the aerial objectifying gaze far less transparent than it appears".[74]

Instead of individuation and attention to differences, observed individuals are produced or constructed to fit predetermined, functional categories that reflect the perspectives of the viewers, not those viewed, simplifying existing complexities and erasing variation.[75] This process of homogenization, of translating bodies into targets and stripping people from their individuality, accounts for dehumanization.

A view from below: Aerial visuals and military errors

The above analysis identifying the limitations of aerial visuals in military decision-making provides a framework for analyzing four concrete military operations where aerial visuals were central to the decision-making process. In all four cases, US and Israeli forces attributed, at least to some extent, erroneous targeting of civilians to malfunctions or misinterpretations of the aerial visualization relied upon by decision-makers in real time. As information about technology-related (or otherwise) military errors is scarce – much of it hidden behind walls of secrecy and confidentiality – these cases were identified following extensive qualitative analysis of military reports and media coverage of military errors in the last two decades (2002–22). While through my research I have identified additional cases in which aerial visuals were identified as contributing to mistaken targeting of civilians (and which had their investigation information released to allow a deep analysis of the decision-making processes), I decided to focus on four cases to provide an in-depth analysis of the facts and context of each military operation. Aiming to enhance (to some extent) the study's generalizability and timeliness, I selected the two most recent cases from each of the two jurisdictions from which I was able to collect rich data (the United States and Israel).

Examining military errors is not without limitations. In addition to the hindsight of the ultimate outcome of the decision-making process, the focus on errors provides a selective sample that overlooks the sources or causes of successful decisions. Therefore, this section does not purport to provide a complete outlook on aerial-focused military decision-making processes; instead, it

72 Shiri Krebs, "Drone-Cinema, Data Practices, and the Narrative of IHL", *Heidelberg Journal of International Law*, Vol. 82, No. 2, 2022, p. 311. Arvidsson further explores the role of digital systems and digital bodies – as opposed to material bodies – in the targeting process. Matilda Arvidsson, "Targeting, Gender, and International Posthumanitarian Law and Practice: Framing the Question of the Human in International Humanitarian Law", *Australian Feminist Law Journal*, Vol. 44, No. 1, 2018, pp. 16–17.

73 T. Wall and T. Monahan, above note 18, p. 243.

74 Daniel Grinberg, "Tracking Movements: Black Activism, Aerial Surveillance, and Transparency Optics", *Media, Culture and Society*, Vol. 41, No. 3, 2019, p. 308.

75 T. Wall and T. Monahan, above note 18, p. 240.

offers a unique glimpse into (some) military errors, examining the role of aerial visuals in the decision-making processes that led to these errors. The data discussed below may be suggestive of flaws in human–machine interactions which can lead to error in other cases, but ascertaining the validity of such a general claim requires additional research.

Evidence from Israel

The killing of Ismail, Ahed, Zakaria and Mohammed Bakr

On 8 July 2014, Israel began a large-scale, seven-week military operation in the Gaza Strip, known as Operation Protective Edge. The operation began following weeks of hostilities, which started with the kidnapping and murder of three Israeli teenagers in the West Bank and continued with large-scale arrests of hundreds of Hamas operatives in the West Bank and massive rocket fire from Gaza into Israel. During the operation, more than 2,000 Palestinians and seventy-three Israelis were killed.[76]

On 16 July 2014, eight days into Operation Protective Edge, Israeli forces received intelligence warning that "Hamas operatives [were] expected to gather at a Hamas military compound in Gaza harbor, in order to prepare military actions against the Israel Defence Forces" (IDF).[77] A container within this compound, suspected of being used by Hamas to store ammunition, had been targeted the previous day by the IDF. Following this intelligence, the IDF decided to use armed drones to provide visualization of the suspected Hamas compound at Gaza harbour.[78] At around 4:00 pm on the same day, the drone operators identified several figures running into the compound toward the container that was targeted the previous day. Based on the drone visuals, the figures were "incriminated" (in military jargon) as Hamas operatives, and a decision was made to attack them. As soon as the figures were seen entering the compound, IDF forces fired their first missile. As a result of the fire, one of the figures was killed and the others began running away from the compound towards other sections of the beach. A second missile then hit the running figures on the public beach outside the compound, as they were trying to escape.

Despite the IDF assessments that they had targeted adult Hamas operatives, soon after the attack it became clear that the victims were all children of the Bakr family. Four children – Ismail Bakr (10 years old), Ahed Bakr (10 years old), Zakaria Bakr (10 years old) and Mohammed Bakr (11 years old) – were killed in

76 "Gaza Crisis: Toll of Operations in Gaza", *BBC News*, 1 September 2014, available at: www.bbc.com/news/world-middle-east-28439404.

77 Israel has not released the materials of the military investigation into this event. Instead, in this section I rely on information included in the State's response to a petition submitted to the Israeli Supreme Court sitting as High Court of Justice against the decision to close the investigation without opening any criminal proceedings. State Response, above note 3, p. 2.

78 *Ibid.*, p. 5. The Israeli response does not use the term "armed drone" and instead refers to an "aerial observation tool".

the attack (one was killed from the first missile and three were killed from the second missile), and four other children were injured.

Following requests from the victims' families and human rights organizations, a military investigation was launched into the incident. In June 2015, the Military Judge Advocate decided not to open criminal proceedings, after concluding that the attack did not violate Israeli or international law.[79] The families and human rights organizations appealed this decision to the Attorney General, and their appeal was dismissed on 9 September 2019. A petition to the Israeli High Court of Justice (HCJ) was ultimately denied on 24 April 2022, after an *ex parte* proceeding in which confidential intelligence was presented to the Court.

While there are various issues – legal and ethical – which merit attention in these legal proceedings, I wish to focus here on those that shed light on the use of aerial visuals for target identification and collateral damage estimates. The Military Judge Advocate clarified that real-time aerial visualization was used in this case as a core element in applying the principle of precaution.[80] The State Response further emphasized that "the forces used a visualization aid to ascertain that civilian[s] [were] not present",[81] and highlighted that "after confirming through visual aids that no uninvolved civilians [were] present, and therefore estimating no collateral damage from the attack, IDF forces decided to attack the figures".[82] In the discussion below I analyze information available from the Israeli investigations in order to evaluate the utilization of aerial visuals by decision-makers in this case and reveal some of the technical, cognitive and human-technical limitations involved, as explored above.

First, the data from the Israeli investigations demonstrates a significant technical limitation of aerial visuals. While the vertical view is highly capable of detecting figures on the ground, the information it provides on those observed is limited in several ways, providing some details while omitting others. The Attorney General's letter rejecting the appeal against the closure of the military police investigation touched on this issue briefly:

> [T]o an observer from the ground, as is evidenced through photos taken by journalists that were present at the scene, it is easy to see that these were children, but as a legal matter, the evaluation of the incident must be done from the perspective of the person that approved the attack, which was based on aerial visualization.[83]

As is clear from this statement, while aerial visuals have been engaged as a means of precaution, in this case this method of visualization was inferior to ground visuals, detecting humans moving but failing to distinguish adult insurgents from playful

79 *Ibid.*, p. 8.
80 *Ibid.*, p. 9.
81 *Ibid.*, p. 21.
82 *Ibid.*, p. 3.
83 The letter from the Office of the Attorney General (Special Operations) informing Adalah lawyers of the decision to deny their appeal on the Military Judge Advocate decision to close the investigation is available (in Hebrew) at: www.adalah.org/uploads/uploads/AG_response_090919.pdf.

10-year-olds. Interestingly, in its response to the petition to the HCJ, the State highlighted not only that "at no stage were the criminalized figures identified as children", but also that IDF forces *could not have identified them as such*.[84] This is an important determination: while it was easy for ground observers to see clearly that the figures on the Gaza beach were young children, it was impossible to reach a similar conclusion using the selected aerial visualization methods. Despite this determination, it is not explained why, if that is the case, only aerial visualization tools were engaged as a means of precaution (especially noting that the "threat" would not have been generated or perceived otherwise). Moreover, the State noted that a military expert with experience in similar attacks was asked to review the visuals from the attack, and he concluded that "it is very difficult to identify that these are not adults".[85] While the State used this expert's opinion to exonerate the decision-makers in this case, it did not provide any explanation as to why a visualization tool that cannot distinguish adults from children was selected as the main means of precaution in this case (and possibly others).

Furthermore, the State Response emphasized that IDF forces used aerial visuals to ascertain that civilians were not present.[86] It then added: "Indeed, throughout the operation, the forces did not identify anyone else present except for the identified figures."[87] Intended to suggest that the forces carefully analyzed the aerial visuals, these statements identify a blind spot in the scope of those visuals. While the investigation concluded that the drone team identified three or four figures, ultimately an additional four children were injured, indicating that the ability to zoom in on the suspected figures may have prevented a broader view of the surrounding area, where other children were playing and were within the damage range of the missiles.

Second, the data from the Israeli investigations also suggests that the interpretation of the aerial visuals may have been distorted because of cognitive biases. As mentioned above, the decision to close the investigation was largely based on the finding that the relevant forces had identified the figures as Hamas operatives. This lethal error was rationalized and excused through four factors:[88]

1. The concrete intelligence relating to Hamas operatives meeting at the location the day before.
2. The figures were identified in a closed and fenced Hamas compound, where only Hamas operatives were expected to be present.
3. The container at the compound was targeted the previous day and IDF forces believed that the figures were attempting to take ammunition that was stored in the container.
4. On 7 August 2014, Hamas operatives attempted to attack the IDF base at Zikim and were killed in the crossfire that ensued. It was therefore assumed that

84 State Response, above note 3, p. 7.
85 *Ibid.*, p. 8.
86 *Ibid.*, p. 21.
87 *Ibid.*, p. 21.
88 *Ibid.*, p. 6.

Hamas operatives were planning to use ammunition from the container to launch a similar attack.

While these factors do not explain why the targeted figures were deemed adult Hamas operatives instead of 10-year-old children, they do suggest that the target identification process may have been affected by cognitive biases (in particular, confirmation, representativeness and availability biases). The pre-existing intelligence and expectations may have led the drone team to interpret the aerial visuals consistently with the existing intelligence and threat scenarios. The experience of the previous recent attack in that area may have skewed the interpretation of the visuals based on the available information from the recent experiences.

The suggestion that the classification of the children as Hamas operatives was influenced by cognitive biases is strengthened when examining other data from this case. For example, the State Response relied on the testimony of one of the naval intelligence officers involved in the incident, who insisted that "a child and a man do not run the same way, it looks different, and I had a feeling we hit adults, not 12-, 14-year-old kids".[89] It is true that some visual indicators are associated with movements of adults (or trained insurgents) while others are associated with movements of children (or civilians). However, in this case the children were depicted moving in a scattered manner, as opposed to an orderly pattern that one might expect of adult insurgents. The only indicator mentioned as leading to the classification of the figures as adults (beyond the operator's "feeling") was that the figures were observed moving "swiftly".[90] However, running (or moving "swiftly") *per se* is a strange criterion in these circumstances, especially as trained insurgents may be moving more slowly out of caution, while children can be expected to run around at the beach (or when attempting to escape an armed attack). The admission that the age classification was based on a "feeling" suggests that instead of concrete visual indicators, the age classification in this case was influenced by a subjective assessment that was formed based on pre-existing intelligence and expectations.[91]

Third, the data from the Israeli investigation demonstrates weaknesses in the human-technical interaction, both with regard to the salience of the visual data and the objectifying gaze of the aerial visuals. Some indicators which could have suggested that the depicted figures were civilians were ignored, or were not salient enough to affect action. For example, IDF forces believed the compound was surrounded with a fence and that access to it was only possible through a guarded gate. Their assessment that only Hamas operatives had access to the compound was based on other sources of information, as well as their operational familiarity with the area. This information, however, was isolated from the aerial visuals, which were designed

89 *Ibid.*, p. 7.
90 *Ibid.*, p. 21.
91 The State further highlighted that some of the witnesses who were involved in the incident watched the videos recording the attack again after they learned that the victims were children. After watching the recordings again, they testified that they still could not identify the figures as children. Clearly, as these comments were made by those suspected of wrongful targeting of children, it is very likely that their second view of the images was affected by motivated cognition dynamics. *Ibid.*, p. 7.

to detect potential threats and thus only focused on the moving figures. The aerial visuals were not used to verify the existence of a fence or a guarded gate, and as far as we know, other sources of updated information about access to this compound from the public beach were not utilized or consulted.

Moreover, data provided in the State Response indicates that the human-technical interaction was flawed, limiting, rather than strengthening, the situational awareness of the force. Three of the children that were killed in the attack died as a result of the second missile, which was fired at the escaping children and hit them at the public area of the beach, outside of the suspected compound. After the first missile was fired, killing one of the children and causing the other three to run away, the drone operators communicated through the radio their uncertainties concerning the boundaries of the Hamas compound. In particular, they communicated their worry that targeting the figures on the beach, outside of the compound, may increase the danger to civilians. The State mentioned this communication in its response as evidence of the sensitivity of the attacking forces to the issue of collateral damage and their desire to ascertain target identification;[92] however, from the information included in the State Response, as well as other relevant materials from the investigation, it seems that the drone operators' concerns went unanswered.[93] This course of events suggests that the salience of the visuals – and the threat that their erroneous interpretation generated – inhibited the forces' awareness of other relevant facts, including non-visual representations of the compound boundaries, and heightened the urgency to act without waiting for a definite response.

Finally, beyond these salience and situational awareness issues, this case exemplifies the objectifying gaze of military drones, which anticipates, produces and then confirms a presumed threat through aerial visualization tools. In this case, the drone team's mission was to surveil a particular area in order to detect potential threats. Through this gaze, any movement within the designated area was suspected, and any figures identified within that space were constructed as a threat. The vertical view through which the children were captured collapsed any variations and erased physical differences to fit a mechanical classification, oblivious to social context and cues. The objectification and dehumanization of the eight children that were killed and injured that day was exercised through the objectifying eye of the drone lens, which constructed these children, one and all, as targets, stripping them from their identities, individuality, families and communities.

The shelling of the Al-Samouni house

On 27 December 2008, the IDF opened a twenty-two-day attack on the Gaza Strip, known as Operation Cast Lead. Israel described the attack as a response to constant rocket attacks fired from the Gaza Strip into Israel's southern cities, causing damage

92 *Ibid.*, p. 8.

93 "Report Details Deadly Drone Attack on Four Palestinian Children", *Al Jazeera*, 12 August 2018, available at: www.aljazeera.com/news/2018/8/12/report-details-deadly-drone-attack-on-four-palestinian-children.

and instilling fear.[94] By the operation's end, public buildings in Gaza were destroyed, thousands of Palestinians lost their homes, many were injured, and about 1,400 were killed.[95] On the Israeli side, Palestinian rockets and mortars damaged houses, schools and cars in southern Israel, three Israeli civilians were killed and more than 1,000 were injured.[96] While the ongoing hostilities continued, the UN Human Rights Council established a fact-finding mission, widely known as the Goldstone Mission, to investigate alleged violations of international human rights law and international humanitarian law (IHL).[97]

One of the main incidents investigated by the Goldstone Mission was the Israeli attack on the Al-Samouni house on 5 January 2009.[98] In brief, following an attack on several houses in the area, IDF soldiers ordered members of the Al-Samouni extended family to leave their homes, and to find refuge at Wa'el Al-Samouni's house. Around 100 members of the extended Al-Samouni family, the majority women and children, were accordingly assembled in Wa'el Al-Samouni's house by noon on 4 January 2009. At around 6:30 or 7:00 am the following morning, Wa'el Al-Samouni, Saleh Al-Samouni, Hamdi Maher Al-Samouni, Muhammad Ibrahim Al-Samouni and Iyad Al-Samouni stepped outside the house to collect firewood in order to make bread. Suddenly a projectile struck next to the five men, close to the door of Wa'el's house, killing Muhammad Ibrahim Al-Samouni and Hamdi Maher Al-Samouni. The other men managed to retreat into the house. Within five minutes, two or three more projectiles had struck the house directly, killing an additional nineteen family members and injuring nineteen more. Based on these facts, the Goldstone Report concluded that the attack on the Al-Samouni house was a direct intentional strike against civilians, which may constitute a crime against humanity.[99]

Following the release of the Goldstone Report, the Israeli military conducted its own investigation into these events. The military investigation did not dispute these facts but instead added that the decision to shell the Al-Samouni house was based on erroneous interpretation of drone images that were utilized in the war room in real time.[100] According to the investigation report, grainy drone images depicted the five men holding long, cylindrical items which

94 Shiri Krebs, "Designing International Fact-Finding: Facts, Alternative Facts, and National Identities", *Fordham International Law Journal*, Vol. 41, No. 2, 2017, pp. 362–363.

95 Israel claims that 1,166 Palestinians lost their lives, of which 706 were "unlawful combatants". The Gaza authorities claim that the number of casualties was 1,444, and the Goldstone Mission found that the correct number varies between 1,387 and 1,417, without distinguishing between civilians and combatants. Human Rights Council, *Human Rights in Palestine and Other Occupied Arab Territories: Report of the United Nations Fact-Finding Mission on the Gaza Conflict*, UN Doc. A/HRC/12/48, 5 September 2009 (Goldstone Report), pp. 90-91, available at: www2.ohchr.org/english/bodies/hrcouncil/docs/12session/A-HRC-12-48.pdf.

96 *Ibid.*

97 Human Rights Council, *The Grave Violations of Human Rights in the Occupied Palestinian Territory, Particularly Due to the Recent Israeli Military Attacks against the Occupied Gaza Strip*, UN Doc. A/HRC/S-9/L.1, 12 January 2009, available at: https://reliefweb.int/report/occupied-palestinian-territory/grave-violations-human-rights-occupied-palestinian-territory.

98 Goldstone Report, above note 95.

99 *Ibid.*, pp. 182–183, 284.

100 Israel Ministry of Foreign Affairs, *Gaza Operation Investigations: Second Update*, 2010.

were mistakenly interpreted as rocket-propelled grenades (RPGs).[101] In May 2012, the military prosecution announced that no legal measures would be adopted in this case against any of those involved in the decision to attack the Al-Samouni house,[102] as the killing of the Al-Samouni family members was not done knowingly and directly, or out of haste and negligence, in a manner that would indicate criminal responsibility.[103] In between, while the Israeli military investigation was still ongoing, Justice Richard Goldstone, the head of the Goldstone Mission, published an op-ed in the *Washington Post* in which he retracted the Goldstone Report's legal findings concerning the Al-Samouni incident. In his op-ed, Justice Goldstone accepted the initial Israeli explanation concerning the attack, stating that the shelling of the Al-Samouni home "was apparently the consequence of an Israeli commander's erroneous interpretation of a drone image".[104] Israeli authorities have used Goldstone's op-ed as proof that the Report itself – including its factual findings – was false and biased.[105]

Similarly to the attack that killed the Bakr family children, the investigations into the attack on the Al-Samouni house demonstrate the significant role of aerial visuals in real-time military decision-making, and in this case, in the wrongful threat identification and perception. Below I explore some of the technical, cognitive and human-technical limitations of this reliance on aerial visualization tools in this case.

First, the data from the military investigation demonstrates a significant technical limit of the particular sensor that was used in this case. The investigation describes the aerial visuals used as so "grainy" that a pile of firewood was easily confused with a cache of RPGs. This means that the technical capability of the relevant sensor was limited, producing murky images that required heavy interpretation. Additionally, this grainy image captured only a fraction of time and space (five men near the doorstep), overlooking the crowded refuge behind the door, filled with hungry and frightened children – information that could have contextualized the situation and changed the interpretation of the image.

Second, the military investigation found it sufficient to conclude that the erroneous attack resulted from a misinterpretation of a grainy image and did not inquire further into the causes of this misinterpretation. Applying the cognitive insights explored above may shed some light on this issue. This incident was not an isolated event, but rather occurred within a broader context of intense

101 *Ibid.* See also Amira Hass, "What Led to IDF Bombing House Full of Civilians during Gaza War?", *Haaretz*, 24 October 2010, available at: www.haaretz.com/2010-10-24/ty-article/what-led-to-idf-bombing-house-full-of-civilians-during-gaza-war/0000017f-da80-d938-a17f-feaaf7860000.

102 Amira Hass, "IDF Closes Probe into Israeli Air Strike that Killed 21 Members of Gaza Family", *Haaretz*, 1 May 2012, available at: www.haaretz.com/israel-news/idf-closes-probe-into-israeli-air-strike-that-killed-21-members-of-gaza-family-1.427583.

103 *Ibid.*

104 Richard Goldstone, "Reconsidering the Goldstone Report on Israel and War Crimes", *Washington Post*, 1 April 2011, available at: www.washingtonpost.com/opinions/reconsidering-the-goldstone-report-on-israel-and-war-crimes/2011/04/01/AFg111JC_story.html?utm_term=.597a7cb64bb9.

105 IDF Strategic Division, "The Goldstone Report: Judge Richard Goldstone Revises His Position", 5 April 2011, available at: www.scribd.com/document/53971147/Response-to-Richard-Goldstone-s-Op-ed-in-the-Washington-Post.

hostilities. Within this context, RPGs were utilized by Palestinian forces in the days prior to the attack on the Al-Samouni house; as a result, it is highly possible that RPGs were easily recalled by decision-makers when they saw the image. Both availability and representativeness biases could have induced a misinterpretation of the visual, based on the familiarity of the forces with the shape of RPGs and the similarity of the situation at the Al Samouni house to practiced scenarios.

Third, the information available in this case further demonstrates weaknesses in the human-technical interaction, both with regard to the salience of the visual data and the objectifying gaze of the aerial visuals. The investigations suggest that the grainy drone image was not the only relevant information available to decision-makers in this case – other available data included non-visual communications with the ground battalion, including information concerning the order to locals to gather at the Al-Samouni house. That additional information could also have informed and contextualized the interpretation of the grainy drone image, offering alternative interpretations to the RPG one, but this information was apparently pushed aside while the drone visual, with its threat interpretation and urgency, grabbed decision-makers' attention. Under the prevailing pressure conditions, the effect of the drone images was strong and immediate, and may have diverted attention from other, less salient sources of information, such as communications from the ground battalion. The investigation itself does not indicate whether any other sources of information were considered (especially given the grainy quality of the drone visual), or whether – and based on what data – collateral damage calculations were conducted.

Finally, much like the Bakr children, the Al-Samouni men were objectified by the aerial gaze, turned into an immediate threat that must be eliminated. Worried and caring husbands, sons and fathers were turned into violent, armed terrorists and attacked with lethal weapons accordingly. The drone did not simply "detect" the threat; its sensors generated the threat and produced the RPG-carrying terrorists. The Al-Samouni family, which a day prior was recognized as a victim of the hostilities and was led into a safe space, was quickly recast as a source of insurgency and threat, a legitimate military target. The swiftness of this process and the immediacy of its outcomes left no room for doubt and no opportunity for its objects to rebel against their drone-generated classification.

Evidence from the United States

The striking of Zemari Ahmadi's car

On 29 August 2021, the US military launched its last drone strike in Afghanistan before American troops withdrew from the country.[106] The strike targeted a white Toyota Corolla in the courtyard of a home in Kabul. Zemari Ahmadi, the

106 Matthieu Aikins *et al.*, "Times Investigation: In U.S. Drone Strike, Evidence Suggests No ISIS Bomb", *New York Times*, 5 January 2022, available at: www.nytimes.com/2021/09/10/world/asia/us-air-strike-drone-kabul-afghanistan-isis.html.

driver of the vehicle, was believed to be an operative of ISIS-Khorasan (ISIS-K), on his way to detonate a bomb at Kabul's international airport. As a result of the strike, the targeted vehicle was destroyed and ten people, including Ahmadi, were killed. In the following days, the US military called this attack a "righteous strike", explaining that it was necessary to prevent an imminent threat to American troops at Kabul's airport.[107] However, following the findings of a *New York Times* investigation,[108] a high-level US Air Force investigation ultimately found that the targeted vehicle did not pose any danger and that all ten casualties were civilians, seven of them children.[109] Despite these outcomes, the investigation concluded that the strike did not violate any law, because it was a "tragic mistake" resulting from "inaccurate" interpretation of the available intelligence, which included eight hours of drone visuals.[110] The investigation suggested that the incorrect – and lethal – interpretation of the intelligence resulted from "execution errors" combined with "confirmation bias".[111]

The US Central Command (CENTCOM) completed its thorough investigation of this incident within two weeks of the attack; however, the full investigation report was never released to the public. On 6 January 2023, following a Freedom of Information Act lawsuit submitted by the *New York Times*, CENTCOM released sixty-six partly redacted pages from the investigation.[112] The details revealed through the investigation report shed light on the centrality of drone visuals in the decision to attack Zemari Ahmadi's car, and the particular dynamics around the interpretation and construction of the drone-generated data. While the report itself mentions "confirmation bias" as a likely reason for the decision-making errors in this case, all three types of challenges (technical, cognitive and human-technical) are evidenced.

First, materials from the investigation identify several technical limitations of the aerial visuals, as applied in this case. While highlighting the precision and quality of the aerial visualization tools used in this case (three to four drones surveilled the car for eight hours prior to the attack), analysts noted in their interviews that at the location of the attack (in a residential area, where the car entered a courtyard), "trees and courtyard overhang limited visibility angles", and that the "video quality obscured the identification of civilians in or near the courtyard prior to the strike".[113] Indeed, one analyst admitted to finally being

107 DoD, "Secretary of Defense Austin and Chairman of the Joint Chiefs of Staff Gen. Milley Press Briefing on the End of the U.S. War in Afghanistan", 1 September 2021, available at: www.defense.gov/News/Transcripts/Transcript/Article/2762169/secretary-of-defense-austin-and-chairman-of-the-joint-chiefs-of-staff-gen-mille/.

108 Eric Schmitt, "No U.S. Troops Will Be Punished for Deadly Kabul Strike, Pentagon Chief Decides", *New York Times*, 13 December 2021, available at: www.nytimes.com/2021/12/13/us/politics/afghanistan-drone-strike.html.

109 DoD, above note 2.

110 *Ibid.*

111 *Ibid.*

112 "Read U.S. Central Command's Investigation into Botched Aug. 29, 2021 Kabul Drone Strike", *New York Times*, 6 January 2023, available at: www.nytimes.com/interactive/2023/01/06/us/kabul-strike-investigation-ar15-6.html.

113 CENTCOM, *Findings and Recommendations for Army Regulation (AR) 15-6 Investigation Civilian Casualty Incident, Kabul, 29 August 2021*, 9 September 2021, redacted and released as USCENTCOM

able to see "additional movement from the house", but explained that at that point in time it was already too late ("[I] did not have time to react").[114]

Second, the CENTCOM investigation attributed the identification error to confirmation bias. The main reason for this determination was the heightened tension following a deadly attack on the airport on 26 August 2021, and specific intelligence reports indicating that a terror organization, ISIS-K, intended to use two vehicles, a white Toyota Corolla and a motorcycle, to launch an assault on US forces at the airport.[115] On 29 August, drone sensors detected a white Toyota Corolla moving to a known ISIS-K compound.[116] The vehicle was then put under continuous observation for approximately eight hours, and Ahmadi, who drove the car, as well as several men he engaged with during the day, were identified as part of the ISIS-K cell.[117]

Beyond the initial intelligence about a white Toyota Corolla, several elements detected through the aerial visuals further led to the decision to strike the vehicle. Firstly, throughout the eight hours of surveillance on the vehicle, drone analysts observed it moving around the city, making various stops, and picking up and dropping off various adult males.[118] Ahmadi's driving was assessed as "evasive"[119] and his route was described as "erratic", which was evaluated to be "consistent with pre-attack posture historically demonstrated by ISIS-K cells to avoid close circuit cameras prior to an attack".[120] Secondly, analysts noted that the driver of the vehicle "carefully loaded items" into the vehicle, and these items were described as "nefarious equipment".[121] Analysts assessed that these items were explosives based on the careful handling and size and apparent weight of the material (at one point, five adult males were observed "carrying bags or other box-shaped objects").[122] Thirdly, at some point, the presence of a motorcycle was detected nearby, fitting the original intelligence.[123] Fourthly, the attack was eventually launched when the vehicle parked at its final destination, where a gate was shut behind it and someone approached it in the courtyard.[124] The shutting of the gate and the movement in the courtyard were interpreted to signal "a likely staging location and the moving personnel to likely be a part of the overall attack plot".[125] The CENTCOM investigation concluded

FOIA #21-0518, p. 9, available at: www.nytimes.com/interactive/2023/01/06/us/kabul-strike-investigation-ar15-6.html.

114 *Ibid.*, p. 001.

115 *Ibid.*, pp. 260, 253–254.

116 The Kabul CENTCOM investigation indicated that in addition to the two military drones that were surveilling the White Toyota, an additional drone, operated by the CIA, was also monitoring the car. *Ibid.*, p. 238.

117 *Ibid.*, p. 197.

118 *Ibid.*, p. 238.

119 *Ibid.*, p. 260.

120 *Ibid.*, pp. 200, 235.

121 *Ibid.*, pp. 260, 247.

122 *Ibid.*, pp. 200, 238, 254.

123 *Ibid.*, p. 244.

124 *Ibid.*, p. 241.

125 *Ibid.*, p. 241.

that each of these signs and signals of threat were interpreted based on the initial intelligence, in a way that was consistent with that threat scenario.

It is significant that CENTCOM was able to acknowledge the problem of cognitive biases in military decision-making processes, and particularly in the interpretation of aerial visuals during real-time events.[126] Later on, in August 2022, the US DoD announced a plan for mitigating civilian casualties in US military operations, which includes addressing cognitive biases, such as confirmation bias, in order to prevent or minimize target misidentification.[127]

Several cognitive biases might have played a role in the wrongful attack on Zemari Ahmadi's car. In particular, it may well be that the initial designation of the white Toyota Corolla as a threat resulted from confirmation bias based on the initial intelligence linking that colour and model of car with a concrete threat. However, from that moment on, that initial error seems to have served as a (wrong) anchor, from which any new information was miscalculated or wrongly evaluated. Moreover, representativeness bias may have also affected decision-makers' judgement, as the interpretive option they continually selected closely resembled the initial problem scenario. Finally, the deadly attack at the airport on 26 August might have triggered availability bias, leading decision-makers to overstate the likelihood that the white Toyota was carrying a bomb because that event or scenario easily came to mind. Ultimately, it seems that a variety of cognitive biases triggered the erroneous and lethal decision. As one of the analysts noted, "the risk of failure to prevent an imminent attack weighed heavily".[128] Another added: "I felt confident that we made the right decision and in turn saved countless lives."[129] This case exemplifies, therefore, how the outputs of an intensive eight-hour aerial surveillance were interpreted to fit an anticipated scenario, where the mere sight of a non-unique car ultimately triggered lethal force.

Third, the data from the CENTCOM investigation further suggests that the salience of aerial visuals may have also contributed to the skewed assessments. In particular, in one of the interviews, it was stated that after the strike was approved, a new, non-visual intelligence report was received, stating that the target was going to delay the attack until the following day (and thereby making the threat non-imminent). But the eyes were already on the target, and those involved did not want to lose sight of the vehicle, so the additional information was brushed aside and the attack was carried out. The description of events detailed in the investigation report also suggests that everyone involved remained fixed upon the various drones' visuals. There is no information about any attempt to cross-reference the identification of the vehicle, check its licence plate, identify the driver or use other sources of information to substantiate the initial assessments.

Finally, the CENTCOM investigation provides another example of the objectifying drone gaze, which is continuously constructing individuals and communities as imminent threats. This threat construction is so entrenched and

126 DoD, above note 8.
127 *Ibid.*
128 CENTCOM, above note 113, p. 205.
129 *Ibid.*, p. 241.

acceptable that despite the baseless targeting of an innocent NGO aid worker and his family, the CENTCOM investigation easily concluded that the errors in this case were "unavoidable given the circumstances".[130] However, the circumstances that made the errors in this case "unavoidable" are exactly those that centre targeting decisions on aerial visuals, which, by design, detect some details and omit others. Zemari Ahmadi was a 43-year-old electrical engineer, a proud father of seven children, who had worked since 2006 for an aid NGO. He had a whole life filled with many details that were completely invisible (and insignificant) to the drone sensors. These sensors turned him into a target, his associates into terrorists, and the water containers he loaded in his car into explosives. The CENTCOM investigation report does not include any of this information, as it is deemed irrelevant, being outside the view of the drone.

The Kunduz hospital bombing

On 3 October 2015, at 2:08 am, a US Special Operations AC-130 gunship attacked a Doctors Without Borders (Médecins sans Frontières, MSF) hospital in Kunduz, Afghanistan, with heavy fire. The attack severely damaged the hospital building, resulting in the death of forty-two staff members and patients and injuring dozens.[131] In the aftermath of the attack, several investigations were carried out by the US military, NATO, the UN Assistance Mission in Afghanistan and MSF.[132] The CENTCOM Kunduz investigation found that the lengthy attack on the protected hospital building resulted from a "combination of human errors, compounded by process and equipment failures".[133] The human errors were attributed to poor communication, coordination and situational awareness, and the equipment failures included malfunctions of communications and targeting systems.[134]

The CENTCOM report specifically indicated that the electronic systems on-board the AC-130 malfunctioned, eliminating the ability of the aircraft to transmit video, send and receive email, or send and receive electronic messages.[135] The AC-130 team was tasked with supporting ground forces against Taliban fire from a "large building". When the gunship arrived in Kunduz, the crew took defensive measures, which degraded the accuracy of certain targeting systems, including the ability to locate ground objects.[136] As a result, the TV sensor operator identified the middle of an empty field as the target location. The team aboard the AC-130 then started searching for a large building nearby and eventually identified a compound about 300 metres to the south that more closely

130 *Ibid.*, p. 241.
131 Shiri Krebs, "Just the Facts: Reimagining Wartime Investigations Concerning Attacks against NGOs", *Berkeley Journal of International Law*, Vol. 37, No. 3, 2019, pp. 412–413.
132 *Ibid.*, p. 414.
133 CENTCOM, *Summary of the Airstrike on the MSF Trauma Center in Kunduz, Afghanistan, on October 3, 2015: Investigation and Follow-On Actions*, 29 April 2016, p. 2.
134 *Ibid.*, pp. 2–3.
135 *Ibid.*, p. 33. See also DoD, "Department of Defense Press Briefing by General Campbell via Teleconference from Afghanistan", 25 November 2015, available at: www.defense.gov/News/Transcripts/Transcript-View/Article/631359/department-of-defense-press-briefing-by-general-campbellvia-teleconference-fro.
136 CENTCOM, above note 133, p. 2.

matched the target description. This compound was in fact the MSF hospital.[137] The navigator questioned the disparity between the first observed location (an open field) and the new location (a large compound), as well as the distance between the two. The TV sensor operator then "re-slaved" the sensors to the original grid and this time identified a "hardened structure that looks very large and could also be like more like a county prison with cells". This other building was in fact the intended target of the operation.[138]

Following the observation of the second compound, as well as the TV sensor operator's expression of concern that they were not observing a hostile act or hostile intent from the first compound,[139] the aircrew requested a clarification of the target, receiving the following description:

> Roger, [Ground Force Commander] says there is an outer perimeter wall, with multiple buildings inside of it. Break. Also, on the main gate, I don't know if you're going to be able to pick this up, but it's also an arch-shaped gate. How copy?[140]

The aircrew immediately identified a vehicle entry gate with a covered overhang on the north side of the hospital compound. After further discussion of whether the covered overhang was arch-shaped, the crew collectively determined that the target description matched the hospital compound as opposed to the intended target building.[141] Following this false identification, the hospital complex was designated as the target location and the aircrew were cleared to destroy both the buildings and the people within the complex.[142]

Ultimately, the US military decided against opening a criminal investigation into any of those involved in the misidentification of the hospital and its following bombardment. Instead, several administrative and disciplinary measures were adopted against sixteen individuals because their professional performance during this incident reflected poor communication, coordination and situational awareness.[143]

The NATO investigation similarly concluded that there was no evidence to suggest that the commander of the US forces or the aircrew knew that the targeted compound was a medical facility.[144] In particular, the NATO report determined that it was "unclear" whether the US Special Forces Commander or the aircrew had the

137 *Ibid.*, pp. 19, 33.
138 *Ibid.*, p. 34.
139 *Ibid.*, pp. 93–94.
140 *Ibid.*, pp. 34, 57.
141 *Ibid.*, pp. 57–58.
142 *Ibid.*, pp. 63–65.
143 Additional factors identified as contributing to the error included the aircrew taking off in a rush without the "normal" briefing and list of protected sites; electronic communications equipment failures that prevented an update on the fly; the aircraft being forced off course and having trouble regaining its orientation once back on station; communication of precise coordinates being fuzzy, prompting the crew to acquire visual confirmation; and, finally, when final approval was requested, no one realized that what the flight crew were describing didn't fit the target requested by troops on the ground. *Ibid.*
144 NATO, "Executive Summary: Combined Civilian Casualty Assessment of an Airstrike on a Medical Facility in Kunduz City on 03 October 2015", November 2015, p. 1, available at: https://shape.nato.int/resources/3/images/2015/saceur/Exec_sum.pdf.

grid coordinates for the hospital available at the time of the air strike.[145] Similar to the CENTCOM investigation, the NATO report concluded that the misidentification of the hospital and its subsequent bombardment resulted from "a series of human errors, compounded by failures of process and procedure, and malfunctions of technical equipment which restricted the situational awareness" of the forces.[146]

The findings of the CENTCOM and NATO investigations suggest that at least part of the identified malfunctions and situational awareness problems were related to the aerial visualization tools used by the aircrew in this incident (as well as the human–machine interaction).

First, the CENTCOM investigation detailed twelve different technical failures and malfunctions that contributed to the misidentification of the hospital as a target.[147] While this part of the report is heavily redacted, at least three failures seem to relate directly to systems providing aerial visualization to the crew and command. In particular, the report mentioned several outages preventing command and crew from viewing a certain area or receiving "pre-mission products", and noted that a core sensor providing aerial visualization during the strike "was looking at the wrong objective".[148]

Additionally, as the aircrew were preparing to strike the target, they took a much wider orbit around the target area than planned, believing they were under threat.[149] Because of this greater distance from the target, the fire control sensors had limited visibility of the target area, and the precision of the targeting system was degraded.[150] Finally, because the attack took place at about 2:00 am, the aircrew were using the AC-130's infrared sensors, which could not show the coloured markings and MSF flag on the building, identifying it as a hospital.[151]

145 *Ibid.*

146 *Ibid.*

147 A significant failure unrelated to the visualization systems was lack of access to the No Strike List database, which was not fully uploaded to the aircraft's systems before the aircraft took off. The investigation concluded that because of this failure, the system could not alert the aircrew to the fact that the target they identified was included on the No Strike List. CENTCOM, above note 133, p. 52.

148 *Ibid.*, p. 106.

149 *Ibid.*, p. 53.

150 Sean Galagher, "How Tech Fails Led to Air Force Strike on MSF's Kunduz Hospital", *Ars Technica*, 1 December 2015, available at: https://arstechnica.com/information-technology/2015/11/how-tech-fails-led-to-air-force-strike-on-msfs-kunduz-hospital/.

151 Larry Lewis, "Protecting Medical Care in Conflict: A Solvable Problem", *OCHA Relief Web*, 9 July 2020, available at: https://reliefweb.int/report/world/protecting-medical-care-conflict-solvable-problem. The CENTCOM investigation mentioned that the hospital was marked with an MSF flag instead of the red cross or red crescent symbols: CENTCOM, above note 133, p. 82. It may be noted, however, that the absence (or invisibility) of a medical symbol such as the red cross does not reduce the protections afforded to medical facilities, as per Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of 12 August 1949, 75 UNTS 31 (entered into force 21 October 1950), Arts 19, 21; Geneva Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea of 12 August 1949, 75 UNTS 85 (entered into force 21 October 1950), Arts 22, 34; Protocol Additional (I) to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, 1125 UNTS 3, 8 June 1977 (entered into force 7 December 1978) (AP I), Arts 12, 13; and Protocol Additional (II) to the Geneva Conventions of 12 August 1949 and relating to the Protection of Victims of Non-International Armed Conflicts, 1125 UNTS 609, 8 June 1977 (entered into force 7 December 1978), Art. 11.

This meant that while the building itself was visible to the attacking forces, details identifying it as a medical facility – such as the MSF flag and logo – were not.

Second, the details concerning the decision-making process that led to the misidentification of the hospital suggest that cognitive biases may have contributed to the error. Specifically, confirmation bias may have strengthened the aircrew's decision that the hospital complex was the building they were looking for. As detailed above, the aircrew received a very vague description of the target area, mainly that it was a large building. As the grid first led them to an open field, they scanned the area for a large building and detected the hospital. Following their request for clarification, they received further information that the target building had an "arch-shaped gate". Looking for such a gate at the building they were viewing, they quickly found a "gate with a covered overhang", which they evaluated as fitting the "arch-shaped" description. This particularly vague description may have triggered confirmation bias in the interpretation of the aerial visuals; instead of searching the building for armed insurgents or ammunition, the aircrew looked for a large building with an arched gate, interpreting the visuals to fit this description (and did not continue to search for another building or compound that may have fit the description better).

Third, the CENTCOM investigation also demonstrates problems in the human-technical interaction. Specifically, the report mentioned that a core sensor providing aerial visualization during the strike "was looking at the wrong objective because [Special Operations Task Force – Afghanistan] leadership did not have situational understanding of that night's operations".[152] This finding highlights the importance of human–technical alignment and proficiency. Additionally, it suggests that heavy reliance on aerial visualization (as well as other military technologies) may lead to human de-skilling, or degradation of human judgement and capabilities. Reliance on technology has a price tag when the relevant systems fail or malfunction. As noted earlier, when military practices are heavily reliant on technology, there is an erosion of decision-makers' own judgement and ability to evaluate evolving situations without that technology. Without fully functioning visualization tools and targeting sensors, the aircrew's professional performance was significantly impaired, they were unable to fully orient themselves, and they failed to identify and correctly assess the gaps in their data. While their own judgement was hampered, the degraded visuals they were informed by made them confident enough to strike.

Finally, a careful reading of the Kunduz investigation suggests that aerial target visualization may generate dehumanization of those observed. For example, in describing the threat perception of the Ground Force Commander, the investigation report quotes the Commander's perception, formed based on "numerous aerial platforms", that the area was "swarming with insurgents".[153] Through the aerial view, Afghan people, including medical doctors, nurses, patients and visitors, looked like "swarming" ants, hornets or locusts. Similarly, a

152 CENTCOM, above note 133, p. 80.
153 *Ibid.*, p. 61.

dialogue between the Flying Control Officer and the navigator concerning the meaning of "target of opportunity" concluded with the Officer's explanation of his understanding of this term (and their orders): "[Y]ou're going out, you find bad things and you shoot them."[154] Aerial visualization tools provided ample opportunity to "find bad things", as even though the aircrew could not detect any ammunition or weapons at the hospital compound, the objectifying gaze of the aerial sensors produced threat and turned a medical facility, and all of its staff, patients and visitors, into legitimate "targets of opportunity."

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The analysis of military investigations in the four examples explored above exemplifies the three types of limitations – technical, cognitive and human-technical – of reliance on aerial visuals in military decision-making. These examples highlight the growing need to better account for technology-related biases and malfunctions, to train military decision-makers to identify and account for these limitations, and to improve military risk assessment and decision-making processes.

Aerial visuals and the application of the law of armed conflict

Military operations are not conducted in a normative vacuum. Military law, rules of engagement and the overarching law of armed conflict (LOAC), including its core customary principles of distinction, precaution and proportionality, apply to the legal evaluation of military operations.[155] The previous section demonstrated how technical, cognitive and human-technical challenges in the interpretation of aerial visuals may negatively influence real-time military fact-finding processes. In this section I examine how these challenges influence the application of – and compliance with – core LOAC principles during military operations.

Aerial visuals influence the application of the LOAC in three ways, through (1) generating information necessary to apply the law in concrete circumstances, (2) affecting the scope of the legal rules, and (3) amplifying vulnerabilities in the LOAC's evidentiary standards. Figure 2 illustrates these three pathways through which aerial visuals may influence the application of the LOAC in concrete cases. I discuss each of the three below.

Fact-finding: Aerial visuals generate information necessary for the application of the LOAC

Aerial visuals provide an evidentiary basis for legal evaluations and establish the factual framework necessary for the legal analysis. Drone visuals, for example, are

154 *Ibid.*, p. 61.
155 Gary D. Solis, *The Law of Armed Conflict: International Humanitarian Law in War*, Cambridge University Press, Cambridge, 2016; M. N. Schmitt, above note 6.

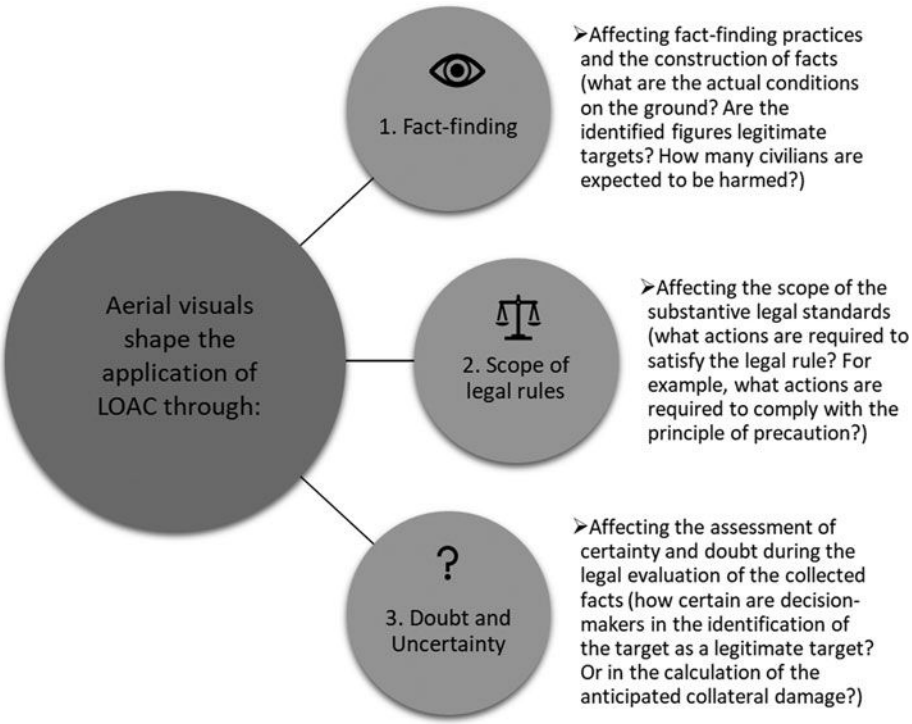

Figure 2. Pathways through which aerial visuals may influence the application of the LOAC.

used to identify and quantify the risk to bystanders during collateral damage assessments, thus influencing the legal evaluation of a planned operation as consistent (or inconsistent) with the requirements of the principle of proportionality. Thus, if the legal standard requires that the anticipated collateral damage is proportionate to the anticipated military gain, aerial visuals take part in determining, *ex ante*, what the anticipated collateral damage in the concrete circumstances is (as well as what gain can be expected from a concrete attack). The challenges and constraints of these fact-finding practices were the focus of the previous sections.

Scope of legal rules: Aerial visualization capabilities influence the scope of the legal requirements

In some cases, aerial visualization capabilities may infuse meaning into and influence the scope of the legal standard. For example, the principle of precaution requires those who plan or decide upon an attack to "take all feasible precautions" in the choice of means and methods of attack in order to avoid, or at least minimize, injury, death

or damage to civilians and civilian objects.[156] How is the scope of this requirement determined? How do we know what satisfies the principle of precaution? What types of actions comply with this legal requirement? The scope of the duties of precaution is context-dependent; it depends on the concrete circumstances and the relevant operational considerations existing at the time, as well as the available military technologies and their capabilities.[157] As a result, Schmitt has argued that belligerents may bear different *legal* burdens of care depending on their technological capabilities.[158] In other words, the availability of real-time aerial visualization technologies shapes what is required by the principle of precaution. While the legal standard remains "feasibility", the availability of advanced aerial visualization technologies (among other tools and capabilities) shapes the scope and extent of what "feasibility" means, or what is the scope of the precaution requirement. In contrast to the first category introduced above, where aerial vision serves as a fact-finding mechanism, generating facts that are then used to apply the legal rule, this category highlights how aerial vision technologies shape the types of actions required to be performed in order to comply with the legal standards.

Doubt and uncertainty: Aerial visuals amplify vulnerabilities in the LOAC's evidentiary standards

Aerial visualization technologies amplify pre-existing vulnerabilities in the evidentiary standards required by LOAC principles. LOAC principles generally entail vague standards of proof; they do not contain strict requirements concerning the acceptable level of certainty – or how confident belligerents must be – regarding the accuracy of belligerents' collateral damage expectations, or their assessment of a target's status as a combatant.[159] As Schmitt and Schauss note, "it is generally accepted that certainty requirements in IHL are to be understood contextually".[160] Each of the core IHL principles accepts at least some – undecided – level of uncertainty: for example, despite the adoption of a civilian presumption in cases of "doubt", it is generally accepted that the principle of distinction permits belligerents to launch attacks under some levels of uncertainty, requiring a "reasonable belief" regarding the legitimacy of the target as a combatant or otherwise legitimate military

156 AP I, Art. 57.

157 US Army, *The Commander's Handbook on the Law of Land Warfare*, FM 6-27, MCTP 11-10C, August 2019, para 2-82 ("What precautions are feasible depends greatly on the context, including operational considerations").

158 M. N. Schmitt, above note 6, p. 460.

159 Matthew C. Waxman, "Detention as Targeting: Standards of Certainty and Detention of Suspected Terrorists", *Columbia Law Review*, Vol. 108, 2008, p. 1387; Michael Walzer, *Just and Unjust Wars*, 3rd ed., Basic Books, New York, 1977, p. 156.

160 Michael N. Schmitt and Michael Schauss, "Uncertainty in the Law of Targeting: Towards a Cognitive Framework", *Harvard National Security Journal*, Vol. 10, No. 1, 2019, p. 158. See also Geoffrey S. Corn, "Targeting, Command Judgement, and a Proposed Quantum of Information Component: A Fourth Amendment Lesson in Contextual Reasonableness", *Brooklyn Law Review*, Vol. 77, No. 2, 2012, pp. 441–442; Adil Haque, "Killing in the Fog of War", *Southern California Law Review*, Vol. 86, No. 1, 2012, p. 91.

target.[161] Similarly, the principle of proportionality requires that the balancing between anticipated collateral damage and anticipated military gain is reasonably expected,[162] and the principle of precaution sets a standard of "feasibility", which has been interpreted to mean "practicable" or "reasonable precautions".[163]

Over the years, many attempts have been made to infuse meaning into the relevant criteria and define the accepted levels of uncertainty in military decision-making. In the context of targeting decisions, for example, Justice Beinisch stated in the Israeli *Targeted Killings* case that information leading to the identification of an individual as a legitimate target "must be well based, strong, and convincing", and that a "significant level of probability of the existence of such risk" is required.[164] Similarly, the US DoD *Law of War Manual* (DoD Manual) determines that "decisions or determinations that a person or object is a military objective must be made in good faith based on the information available at the time."[165] The DoD Manual further clarifies that "the mere fact that a person is a military-aged male with no additional information would be speculative and insufficient to determine that person to be a military objective".[166] At the same time, however, the Manual notes that "[i]ndividuals may consider persons or objects to be military objectives and make them the object of attack even if they have some doubt".[167]

In the context of the precaution requirements, neither existing literature nor State practice fully clarify how to operationalize the scope of and the required level of certainty within the feasibility requirement. The DoD Manual explains that the scope and meaning of feasibility are context-dependent and may change from one decision to the next depending on the circumstances. The Manual emphasizes that

> [i]n any event, the law of war, including the requirements discussed in this section, does not forestall commanders and other decision-makers from making decisions and taking actions at the speed of relevance, including in high-intensity conflict, based on their good faith assessment of the information that is available to them at the time.[168]

Waxman adds that "[w]hile it is impossible to pin down a precise formula for calculating reasonableness, factors such as time constraints, risks, technology, and resource costs emerge over time as key considerations in the legal analysis".[169]

The attempts to clarify, to the extent possible, the evidentiary requirements and burdens of proof in military decision-making are important. At the same time, they leave many grey areas open to interpretation (which may be justified and

161 M. N. Schmitt and M. Schauss, above note 160, p. 156.
162 AP I, Art. 57; M. N. Schmitt and M. Schauss, above note 160, p. 172.
163 M. N. Schmitt and M. Schauss, above note 160, pp. 182–183.
164 HCJ, *Public Committee Against Torture v. Government of Israel (Targeted Killings)*, HCJ 769/02, 2006, Separate Opinion of Justice Beinisch.
165 DoD, *Law of War Manual*, 31 July 2023 (DoD Manual), section 5.4.3.2.
166 *Ibid.*, section 5.4.3.2.
167 *Ibid.*, section 5.4.3.2.
168 *Ibid.*, section 5.5.3.
169 M. C. Waxman, above note 159, p. 1389.

perhaps even necessary). These grey areas include, among other issues, the acceptable level of doubt, the necessary level of proof, and the type, number and recency of the evidence required.[170] Aerial visuals are considered part of the solution to this inherent uncertainty in war. In its 2023 update to the *Law of War Manual*, the US DoD added a specific clarification concerning the "available information" required to classify an individual as a military target, including the necessary feasible precautions for verifying such a classification.[171] The Manual specifically mentions in this context that feasible precautions for verifying target identification may include "visual identification of the target through intelligence, surveillance and reconnaissance platforms".[172] The analysis above suggests, however, that the collection of additional information through aerial visuals may not necessarily resolve the inherent uncertainty concerning core facts. Instead, it may add another layer of uncertainty concerning the methods of data interpretation, the technical limits of the sensors, and the details that are highlighted in – as well as those that are redacted from – the factual framework through aerial vision. Ironically, this uncertainty about how core facts are generated may enhance decision-makers' certainty in the decisions they make based on data generated through these tools, due to the decision-making biases mentioned above. Beyond influencing the collection and interpretation of facts, cognitive biases and human-tech interactions also affect the assessment of certainty and doubt during the legal evaluation of the collected facts. For example, automation bias may lead decision-makers to underestimate the level of uncertainty attributed to technology-generated evidence such as aerial visuals, and salience of aerial visuals may lead to a higher level of certainty than is appropriate as attention is diverted from other, less salient parts of the available information.

Relatedly, most of the discussions around certainty levels and standards of proof assume a rational decision-making process. In their mathematical formulae for conceptualizing uncertainty in the law of targeting, Schmitt and Schauss propose what they call a "cognitive framework" designed to reflect "how uncertainty factors into the deliberative targeting process".[173] Their "cognitive framework", however, treats decision-makers as rational actors, capable of weighing the various relevant variables as they consider the seemingly objective information at their disposal. It is thus more tantamount to an analytical framework than a cognitive one, as it leaves out the cognitive dynamics and biases that affect decision-making under conditions of pressure and uncertainty. I propose that Schmitt and Schauss's framework – and the conceptualization of

170 Schmitt and Schauss propose various mathematical formulae to address this problem, though they acknowledge that their proposed approach does not – and does not intend to – settle the matter, but aims, instead, to "spark discussion about how to consider the uncertainty that infuses many targeting operations in a way that reflects the reality of, and practice on, the battlefield". M. N. Schmitt and M. Schauss, above note 160, p. 153.

171 DoD Manual, above note 165, sections 5.4.3.2, 5.5.3.

172 *Ibid.*, sections 5.4.3.2, 5.5.3.

173 M. N. Schmitt and M. Schauss, above note 160, p. 153.

uncertainty in military decision-making more broadly – should be extended to include cognitive and human-technical biases. While bounded rationality characterizes decision-making processes generally, this article highlights the uncertainties and biases triggered by or enhanced through aerial visuals (biases that are often more difficult to identify as the technology-generated outputs are perceived as "neutral" or "objective"). Therefore, in addition to the collection of more information, and in line with the 2022 DoD civilian harm mitigation plan mentioned above,[174] it is crucial to train military personnel to identify the technical, cognitive and human-technical limitations of the "available information".

Aerial visuals and the application of the LOAC: Returning to the attack on the Bakr children

The military operations examined above demonstrate the three pathways through which aerial visuals shape the application of the LOAC. First, aerial visuals were used to "detect" (or generate) a concrete threat. Second, the same aerial visuals that generated the threat were then used to define the scope of actions required by the legal rules and to legally justify the use of lethal force (required to respond to the detected threat). Third, aerial visuals played a role in mitigating doubt and uncertainty during the decision-making process. I shall now return to the IDF attack on the Bakr children on Gaza beach to exemplify these dynamics.

First, in the attack on the Bakr children, it was the drone-generated visual that detected the presence of "Hamas insurgents" at the Gaza beach. Despite the prior intelligence, there was no concrete external threat on the beach that day, and the false threat identification resulted from misreading or misinterpreting the drone visuals. In contrast to the drone visuals, pictures taken from the ground minutes before the attack, by journalists who were located at a nearby hotel, provide a different view which clearly indicates that the figures running on the beach were children.[175]

Second, the same technology that generated the threat has also been the one used to determine the scope of Israel's duty of care under the precaution principle, and to satisfy the legal standards required to approve lethal force against the identified threat (necessity, distinction, precaution and proportionality). As noted in the previous section, the Military Judge Advocate specified that drone sensors ("real-time aerial visualization") were utilized in this case – as well as in other cases – as a key element in fulfilling the IDF's duties under the LOAC's core

174 See the above text at note 127.

175 For example, see the sequence of images available in Alexander Marquardt, "Israeli Strike Kills Four Boys Playing on Gaza Beach", *ABC News*, 17 July 2014, available at: https://abcnews.go.com/International/israeli-strike-kills-boys-playing-gaza-beach/story?id=24583817. Wilcox reflects upon this parallel threat generation and legitimation of means to curtail the manufactured threat, noting that "[d]rone warfare simultaneously produces bodies in order to destroy them, while insisting on the legitimacy of this violence through gendered and racialized assumptions about who is a threat". Lauren Wilcox, "Embodying Algorithmic War: Gender, Race, and the Posthuman in Drone Warfare", *Security Dialogue*, Vol. 48, No. 1, 2017, p. 21.

principles.[176] In particular, it was stressed that "the forces used a visualization aid to ascertain that civilian[s] [were] not present"[177] and that "after confirming through visual aids that no uninvolved civilians [were] present, and therefore estimating no collateral damage from the attack, IDF forces decided to attack the figures".[178] The scope of the duty to apply "feasible" precaution measures was shaped by the availability of real-time drone visuals. The visuals were then (mis)interpreted as depicting only Hamas operatives, identifying no civilians in the area. This drone-generated information was subsequently used to satisfy the principles of necessity, distinction, precaution and proportionality, rendering the planned attack lawful under the LOAC (a decision that was not impacted by the actual outcomes of the attack, as these legal principles focus on the information available at the decision-making moment).

Third, the determination of whether a planned attack is lawful under the LOAC involves an assessment concerning the level of certainty arising from the available information (or how certain decision-makers are in the accuracy and sufficiency of the information available to them). In the attack on the Bakr children, this available information consisted mainly of the drone visuals. Initially, based on the drone visuals, the drone operators were convinced that the figures depicted in the visuals were Hamas operatives. However, after the first missile was fired, killing one of the children and causing the other three to run away, the drone operators communicated through the radio that they were uncertain about the possible presence of civilians at the beach, outside the Hamas compound. This uncertainty concerning possible collateral damage did not hamper their continued certainty in their initial determination that the figures detected near the compound were indeed Hamas operatives. The certainty in what is seen through the drone sensor overshadows the uncertainty in what remains outside its scope.

Conclusion

This article sheds light on several challenges to military decision-making stemming from the heavy reliance on real-time aerial visuals. While adding valuable information, these visuals also place additional burdens on decision-makers and may hinder decision-making processes, leading to tragic and undesired outcomes. Aerial visuals mediate actual conditions on the ground in meaningful ways that are not fully acknowledged or dealt with by military organizations. Technical constraints and limitations of aerial visualization tools produce partial, sometimes misleading views of people, objects and spaces; cognitive biases trigger erroneous interpretations of aerial visuals which are consistent with existing expectations or recent experiences; and human-technical limitations degrade human operators'

176 State Response, above note 3, p. 9.
177 *Ibid.*, p. 21.
178 *Ibid.*, p. 3.

abilities to exercise their judgement, notice less salient sources of information and appreciate the complexity of the reality that is re-created through aerial sensors. The result is suboptimal knowledge production processes that lead, on some occasions, to irreversible outcomes. These findings are important not only in the context of military decision-making but also for the growing reliance on aerial visuals in other contexts, including surveillance for policing, counterterrorism and national security.

Based on lessons learned from the military investigations analyzed above, I identify five potential directions for improving aerial-centred military knowledge production processes:

1. Military organizations should explore ways to increase the transparency of the data limitations involved, including highlighting the blind spots, technical capabilities and scope of the visuals.
2. Image interpretation should become more robust, and disagreements concerning the meaning of the visuals must be carried forward to decision-makers, highlighting any subjective elements in the meaning-making of aerial images.
3. Aerial visuals should be compared with and complemented by other sources of information as a matter of routine or standard operating procedure, and measures should be adopted to increase the salience of non-visual data sources.
4. Military decision-makers should be better trained to work with and interpret aerial visuals. Training should include information about the limits of the aerial view, its technical scope and blind spots, the potential dehumanizing effects of aerial vision, and the cognitive biases it may trigger.
5. *Ex post* investigations should focus on and identify problems in human–machine interaction, providing lessons for subsequent operations. While anticipated outcomes may continue to protect individual decision-makers from legal responsibility, actual outcomes – and in particular, any gap between *ex ante* expectations and *ex post* outcomes – should be a core focus of *ex post* investigations, in an effort to improve future decision-making processes.

Further development of these ideas is essential to protecting individuals in armed conflicts. Aerial visuals hold many promises for military decision-making, but at the same time, they can trigger operational errors leading to the loss of human lives. At a time when targeting decisions increasingly rely on aerial visuals, it is essential to develop effective ways to better account for misinterpretation and fact-finding weaknesses. The lessons learned from past war room failures discussed in this article are one place to start.

International Review of the Red Cross (2023), **105** (924), 1729–1757.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000346

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Building the case for a social and behaviour change approach to prevent and respond to the recruitment and use of children by armed forces and armed groups

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Abstract

Over the last decade, social and behaviour change strategies have increasingly been used to address human rights and child protection concerns, including harmful practices such as child marriage, female genital mutilation and violent discipline. Social and gender norms have also been recognized as key drivers of child

† This article is written in the authors' personal capacities and does not necessarily represent the views of any institution with which they are affiliated.

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recruitment. Nonetheless, the use of social and behaviour change strategies to prevent and respond to the recruitment and use of children in armed conflict has not yet been systematically explored or applied. Building on academic and practical sources, including findings from studies by the International Committee of the Red Cross and United Nations University, social and behavioural science theory, experiences from the Monitoring and Reporting Mechanism on grave violations against children, and academic literature, this article explores how social and behaviour change approaches can inform prevention of and response to the recruitment and use of children in armed conflict. The article concludes that social and behaviour change approaches can effectively inform prevention and reintegration efforts and can facilitate responses that bridge the humanitarian, development and peace nexus. Using social and behaviour change approaches can help to reveal why children are recruited from the perspective of key actors and entities across the socio-ecological framework in order to prevent the practice from becoming more accepted.

Keywords: child recruitment, social and behaviour change, armed conflict, prevention and response, root causes, social and gender norms, armed forces and armed groups, roots of restraint, commanders, reintegration.

Introduction

Over the last decade, social and behaviour change strategies have increasingly been used to address child protection concerns, including harmful practices such as child marriage, female genital mutilation and violent discipline.[1] Social and gender norms have also been recognized as key drivers of child recruitment.[2] Nonetheless, the use of social and behaviour change strategies to prevent and respond to the recruitment

1 Andrea C. Johnson *et al.*, "Qualitative Evaluation of the Saleema Campaign to Eliminate Female Genital Mutilation and Cutting in Sudan", *Reproductive Health*, Vol. 15, 2018, available at: https://reproductive-health-journal.biomedcentral.com/articles/10.1186/s12978-018-0470-2 (all internet references were accessed in August 2023); Grandmother Project, available at: https://grandmotherproject.org/; Kate Doyle *et al.*, "Gender-Transformative Bandebereho Couples Intervention to Promote Male Engagement in Reproductive and Maternal Health and Violence Prevention in Rwanda: Findings from a Randomized Controlled Trial", *PLoS ONE*, Vol. 13, No. 4, 2018, available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0192756; Tanya Abramsky *et al.*, "Findings from the SASA! Study: A Cluster Randomized Controlled Trial to Assess the Impact of a Community Mobilization Intervention to Prevent Violence against Women and Reduce HIV Risk in Kampala, Uganda", *BMC Medicine*, Vol. 12, No. 22, 2014, available at: https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-014-0122-5; Save the Children, *Choices, Voices, and Promises: Empowering Very Young Adolescents to form Pro-Social Gender Norms as a Route to Decrease Gender Based Violence and Increased Girls' Empowerment*, 2015.

2 Alliance for Child Protection in Humanitarian Action, *CAAFAG Programme Development Toolkit: Training Guide and Guidelines*, 2022, available at: https://alliancecpha.org/sites/default/files/technical/attachments/caafag_toolkit_-_guidelines_en.pdf.

and use of boys and girls[3] in armed conflict has not yet been systematically explored or applied.

This article explores how social and behaviour change approaches can strengthen prevention of and response to the recruitment and use of boys and girls in armed conflict. It builds on an increasing body of literature and guidance seeking to leverage social and behavioural science and social and behaviour change strategies to promote positive outcomes for children with respect to violence prevention.

In 2021, the United Nations (UN) Secretary-General released a guidance note on behavioural science urging UN entities to "explore and apply behavioural science in programmatic and administrative areas"[4] in order to achieve the Sustainable Development Goals, including on violence prevention. Yet, in current practice there is a need for an enhanced focus on how to change the behaviours of boys and girls, their caregivers, communities, and parties to conflict, as a preventive method and response strategy to child recruitment. Furthermore, inadequate attention has been paid to how social and gender norms are both replicated and challenged in the conduct of armed groups. This has resulted in a lack of attention to the differentiated needs of boys and girls in the release and reintegration processes.

Limitations and purpose

To demonstrate how social and behaviour change approaches can be applied to understand why children are being recruited, we use available research on the drivers of child recruitment. Sometimes we present assumptions to illustrate what a social and behavioural approach might look like in prevention and response efforts to child recruitment. In practice, formative research from the specific locality of intervention is needed to identify the drivers in each context and help answer the question of why the practice is happening.[5] It is our hope that this article will contribute by providing an approach and methodology for identifying the social and behavioural drivers of the practice, and insights on how to better address it through evidence-based interventions targeting these drivers.

3 This paper uses the definition of a child from the Convention on the Rights of the Child: a child means every human being below the age of 18 years.

4 United Nations, *United Nations Secretary-General Guidance Note on Behavioural Science*, 2021, available at: www.un.org/en/content/behaviouralscience/.

5 As an example of formative research in this area, UNICEF Lebanon conducted a study in 2020 to identify drivers of violence, including the recruitment and use of children, which exemplifies the type of data collection needed: UNICEF, *Underneath the Surface: Understanding the Root Causes of Violence against Children and Women in Lebanon*, Beirut, 2020, available at: www.unicef.org/lebanon/reports/understanding-root-causes-violence-against-children-and-women-lebanon. See also Noriko Izumi and Line Baagø-Rasmussen, "The Multi-Country Study on the Drivers of Violence Affecting Children in Zimbabwe: Using a Mixed Methods, Multi-Stakeholder Approach to Discover What Drives Violence", *Vulnerable Children and Youth Studies*, Vol. 13, Supp. 1, 2018.

The normative framework on recruitment and use of children in armed conflict

More than twenty-five years have passed since the publication of the report *Impact of Armed Conflict on Children* by Graça Machel.[6] The report, commissioned by the UN General Assembly, concluded that armed conflict disproportionately impacts children and identified children as the primary victims of armed conflict. The report marked the beginning of the UN-wide effort to improve the situation of children in armed conflict.

Included as one of the six grave violations against children in armed conflict, recruitment and use of children is defined as the "compulsory, forced and voluntary conscription or enlistment of children into any kind of armed force or armed group".[7] The Paris Principles define a child associated with an armed force or armed group as

> [a]ny person below 18 years of age who is or who has been recruited or used by an armed force or armed group in any capacity, including but not limited to children, boys and girls, used as fighters, cooks, porters, messengers, spies or for sexual purposes. It does not only refer to a child who is taking or has taken a direct part in hostilities.[8]

The recruitment and use of children under the age of 15 is prohibited in international humanitarian law (IHL) and international human rights law.[9] This has been further strengthened by the Optional Protocol on the Involvement of Children in Armed Conflict to the Convention on the Rights of the Child, which requires States Parties to increase the minimum age for compulsory recruitment and for direct participation in hostilities to 18 years.[10] The Optional Protocol also prohibits non-State armed groups from recruiting or using children under the age of 18. In addition to these international frameworks, there are regional and national frameworks that prohibit or limit the recruitment and use of children – for example, the African Union's African Charter on the Rights and Welfare of the Child, which prohibits the recruitment and use of any child.[11]

Though legal protections for children affected by armed conflict have been strengthened over recent decades, children's rights are continuously violated by parties to conflict across the world. In fact, the last decade has seen an increase in

6 Graça Machel, *Impact of Armed Conflict on Children*, UN General Assembly, 1996, available at: https://documents-dds-ny.un.org/doc/UNDOC/GEN/N96/219/55/PDF/N9621955.pdf?OpenElement.

7 *The Paris Principles: Principles and Guidelines on Children Associated with Armed Forces and Armed Groups*, 2007, available at: www.unicef.org/mali/media/1561/file/ParisPrinciples.pdf.

8 *Ibid.*

9 The prohibition is stipulated in the 1977 Additional Protocols to the Geneva Conventions and in the 1989 Convention on the Rights of the Child.

10 Office of the UN Special Representative of the Secretary-General for Children and Armed Conflict, *The Six Grave Violations against Children during Armed Conflict: The Legal Foundation*, New York, 2013, available at: https://childrenandarmedconflict.un.org/publications/WorkingPaper-1_SixGraveViolationsLegalFoundation.pdf.

11 African Charter on the Rights and Welfare of the Child, 1990, available at: https://au.int/sites/default/files/treaties/36804-treaty-african_charter_on_rights_welfare_of_the_child.pdf.

the recruitment and use of children in certain locations, including, for instance, across countries in the Middle East. In the 2022 report of the UN Secretary-General on *Children and Armed Conflict*, the UN verified the continued recruitment and use of children in twenty-three out of the twenty-four situations covered in the report.[12] In total more than 7,600 children were verified as having been recruited and used, in cases attributed to more than fifty-five parties listed in the report.[13] Due to the continued prevalence of high-intensity conflicts and protracted crises, it is most likely that child recruitment will remain a standing protection concern for children affected by armed conflict.

Conceptual framework for applying social and behaviour change strategies

There are multiple drivers that influence human behaviours at different levels, and a number of conceptual models have been developed to map these.[14] In this article we explore how conceptual frameworks can guide social and behaviour change programming to prevent child recruitment using the socio-ecological model[15] and the behavioural drivers model.[16] These models are illustrated in Figure 1 and Figure 2 below.

Of the various behavioural factors that may influence a practice, social and gender norms are central to behaviour change strategies. Notably, not all behavioural factors will be relevant to tackling a practice. Social and gender norms may not always play a role, but when they do, it is necessary to understand and leverage them to ensure effective interventions. We will start by briefly outlining the theoretical concepts of social and gender norms, and we will then use this understanding to explain how these can be leveraged in social and behaviour change programming to prevent the recruitment and use of children in armed conflicts.

What are social and gender norms?

Social norms are informal rules of behaviour in a group that guide what is considered socially acceptable for members of the

12 United Nations, *Children and Armed Conflict: Report of the Secretary-General*, UN Doc. A/77/895-S/2023/363, New York, 2023, available at: https://daccess-ods.un.org/access.nsf/Get?OpenAgent&DS=S/2023/363&Lang=E.

13 *Ibid.*

14 See, for example, Marco C. Yzer *et al.*, "The Role of Distal Variables in Behavior Change: Effects of Adolescents' Risk for Marijuana Use on Intention to Use Marijuana", *Journal of Applied Social Psychology*, Vol. 34, No. 6, 2003, Fig. 1, available at: www.researchgate.net/figure/An-integrative-model-of-behavioral-prediction_fig1_227666971; Howard Leventhal, S. Stephen Kegeles, Godfrey Hochbaum and Irwin Rosenstock, "Health Belief Model", available at: www.besci.org/models/health-belief-model; Social Change UK, "The COM- B Model of Behaviour", London, 2019, available at: https://social-change.co.uk/files/02.09.19_COM-B_and_changing_behaviour_.pdf.

15 See Jill. F. Kilanowski, "Breadth of the Socio-Ecological Model", *Journal of Agromedicine*, Vol. 22, No. 4, 2017, pp. 295–297.

16 See Vincent Petit, *The Behavioural Drivers Model: A Conceptual Framework for Social and Behaviour Change Programming*, UNICEF, 2019.

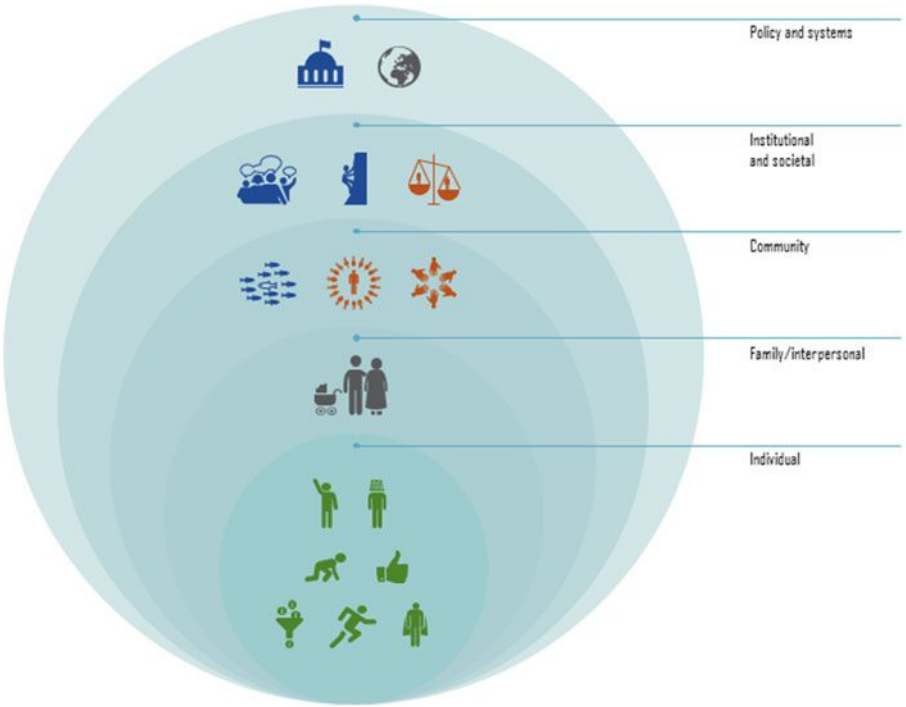

Figure 1. The socio-ecological model. Source: Vincent Petit, *The Behavioural Drivers Model: A Conceptual Framework for Social and Behaviour Change Programming*, UNICEF, 2019, p. 53.

group.[17] Social norms are expectations that guide how we think other people want us to behave in our families, communities and society, regardless of whether such perceptions are true.[18]

Gender norms are defined by expected attitudes and behaviours relating to gender. They are part of socialization and are learned from childhood. They can be defined as the social rules and expectations that keep gendered roles in place. Gender norms define the roles, duties and responsibilities expected of women, girls, men and boys.[19] They reflect and perpetuate inequitable power relations across the socio-ecological framework, from the policy and institutional levels to the individual level, and are most often disadvantageous for women.[20]

Social and gender norms that promote or enable violence, such as communities practicing child marriage or subjecting children to violent discipline,

17 Beniamino Cislaghi and Lori Heise, "Four Avenues of Normative Influence: A Research Agenda for Health Promotion in Low and Mid-Income Countries", *Health Psychology*, Vol. 37, No. 6, 2018.

18 Vincent Petit and Tamar Zalk, *Everybody Wants to Belong: A Practical Guide to Tackling and Leveraging Social Norms in Behaviour Change Programming*, UNICEF and University of Pennsylvania Social Norms Group, 2019.

19 Beniamino Cislaghi and Lori Heise, "Gender Norms and Social Norms: Differences, Similarities and Why They Matter in Prevention Science", *Sociology of Health and Illness*, Vol. 42, No. 2, 2020.

20 *Ibid.*

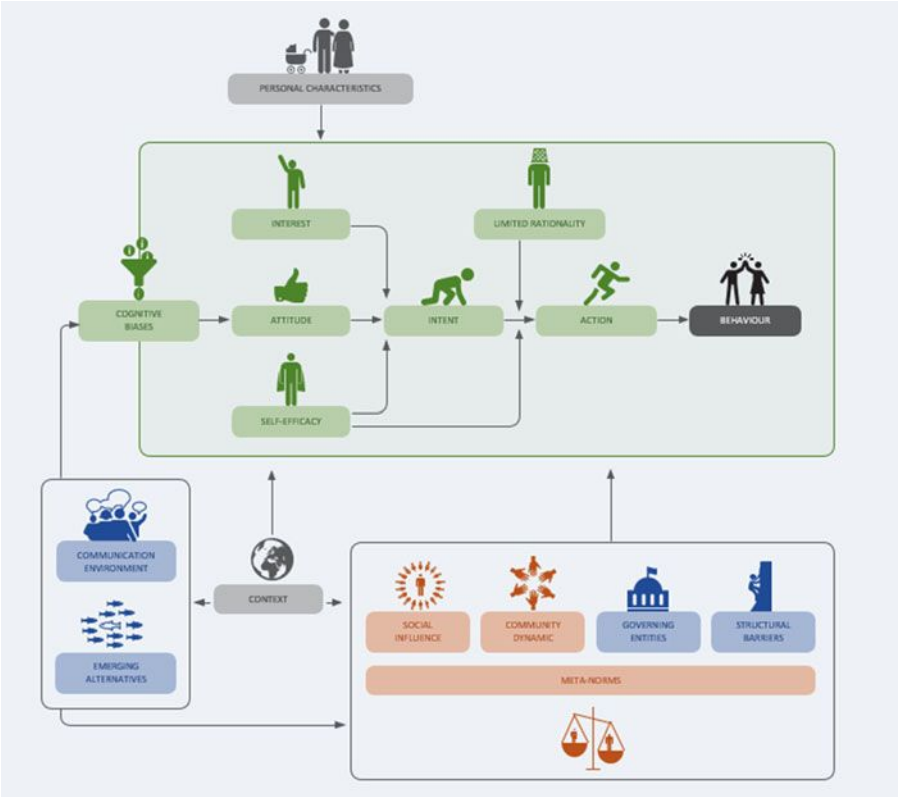

Figure 2. The behavioural drivers model. Source: Vincent Petit, *The Behavioural Drivers Model: A Conceptual Framework for Social and Behaviour Change Programming*, UNICEF, 2019, p. 28.

usually evolve over time. Groups and individuals conform to certain behaviours that become perceived as normal. In the process of this evolution, social and gender norms across the personality of individuals and institutions can change in ways that allow for violence to become more accepted and normalized and therefore more likely to occur[21] – or the other way around. The recruitment and use of children in armed conflict can also be the result of changing norms in the context of conflict that contribute to the practice becoming more widespread and accepted.

What is social norms theory?

Social norms theory can help explain why groups differ from each other – for example, why one police force may use more aggressive interrogation tactics than

21 Deborah A. Prentice, "The Psychology of Social Norms and the Promotion of Human Rights", in Ryan Goodman, Derek Jinks and Andrew K. Woods (eds), *Understanding Social Action, Promoting Human Rights*, Oxford University Press, New York, 2012, Chap. 2.

another, or why people in some places practice child marriage and others do not.[22] The influence of social norms is linked to membership of a group. To change a specific behaviour, it is necessary to identify whether it is governed by social norms and/or by other behavioural factors. The following five key concepts[23] can help us to identify social norms.[24]

- **Reference network:** The group of people around us, whose opinion matters to us. The individuals in a reference network influence how we make our decisions, because we want to be accepted and to belong to the same group as them.
- **Normative expectations:** What we believe our reference network considers right, or what we believe it expects us to do. Our human desire for acceptance will cause us to conform to the believed expectations.
- **Empirical expectations:** Beliefs we hold about what others in the group do. We may mistakenly think behaviours are more typical than they really are. This can lead to behaviours being widespread in a group, even if sometimes most people privately disapprove of them and would prefer to do otherwise. These misconceptions are called pluralistic ignorance.
- **Sanctions:** Social norms are maintained based on approval and disapproval of the reference group. When we follow the rules, we are socially rewarded, e.g. accepted, praised or honoured. If we break them, we are socially punished or sanctioned. This social pressure to comply can take many forms, including public mockery, stigma, exclusion and violence.

Social norms in a group do not always reflect the private opinion or values of individual members, and as a result may diverge from what the group considers desirable and appropriate behaviour. Conceptualizing social behaviour as a representation of the group clarifies how and when these divergences occur. This can help to explain why customary practices such as child marriage and female genital mutilation continue, even after individuals have been convinced of their damaging effects or have changed their attitude towards these practices.[25] This has also been described as the differentiation between individuals' attitude towards a norm versus the perception of a norm. Attitude change refers to changing how a person *personally* feels about a behaviour, while norm change refers to changing an individuals' perception of *others'* feelings or

22 *Ibid.*

23 Cristina Bicchieri, *Norms in the Wild: How to Diagnose, Measure, and Change Social Norms*, Oxford University Press, New York, 2016; V. Petit and T. Zalk, above note 18.

24 Various tools are available for guidance on diagnosing social norms. See, for example, Cait Davin *et al.*, *Social Norms Exploration Tool*, Social Norms Learning Collaborative, Institute for Reproductive Health, 2020, available at: www.alignplatform.org/resources/social-norms-exploration-tool-snet; Leigh Stefanik and Theresa Hwang, *Applying Theory to Practice: CARE's Journey Piloting Social Norms Measures for Gender Programming*, CARE USA, 2017, available at: www.alignplatform.org/resources/applying-theory-practice-cares-journey-piloting-social-norms-measures-gender-programming; C. Bicchieri, above note 23; Cait Davin *et al.*, *Getting Practical: Integrating Social Norms into Social and Behaviour Change Programs*, Social Norms Learning Collaborative, Breakthrough ACTION, Johns Hopkins Center for Communication Programs, 2021, available at: https://breakthroughactionandresearch.org/getting-practical-tool/.

25 D. A. Prentice, above note 21.

In focus 1: Parents' acceptance of or opposition to child recruitment

Caregivers may agree to let their children join armed forces or armed groups because it is practiced by other members of the community who matter to them (reference network). In addition to other enabling factors to child recruitment, such as lack of education and livelihood opportunities, parents may believe that the other members of the community expect them to let their children join armed forces or armed groups (normative expectation), and they may worry that they will be criticized or ill-treated (sanctions) if they do not conform to the norm of agreeing to let their children join armed forces or armed groups, or encouraging them to do so. The situation could, however, be entirely different: it is possible that most of the community members privately think that child recruitment is wrong and would prefer not to allow it. At the same time, most community members may think that everyone around them endorses child recruitment, so they adapt to the practice (pluralistic ignorance).

behaviours[26] (normative expectations). With respect to how norm perception can be changed, three non-exhaustive ways are explained here: (1) individual behaviour, (2) group summary information, and (3) institutional signals. People can be influenced by individual public behaviour in their reference group, such as gossip, observation or humour; by summary information about a group's opinions and behaviour through announcements, statistics or news (this can be particularly useful for addressing pluralistic ignorance); or by institutional systems, such as public rules, punishments and rewards.[27]

The socio-ecological model, shown in Figure 1, displays the interplay between the individual, parents/caregivers, family, community, institutional/societal and policy/system levels. The socio-ecological model is used to understand the different levels at which norms, behaviours and practices may influence the lives of children, and to identify what can protect them at each level.[28] By combining programming at different levels, our interventions can be more effective in generating change. Social and behaviour change research also allows for identifying positive behaviours that can promote peace and social cohesion or mitigate local conflict, for instance through traditional mechanisms or key influencers that can be promoted positively as part of interventions.

26 Margaret E. Tankard and Elisabeth Levy Paluck, "Norm Perception as a Vehicle for Social Change", *Social Issues and Policy Review*, Vol. 10, No. 1, 2016.

27 *Ibid.*

28 For more information, see Alliance for Child Protection in Humanitarian Action, "Standard 14: Applying a Socio-Ecological Approach to Child Protection Programming", in *Minimum Standards for Child Protection in Humanitarian Action*, 2023, available at: https://handbook.spherestandards.org/en/cpms/#ch006_002.

What are social and behavioural drivers?

To develop an evidence-based social and behaviour change strategy to address the recruitment and use of children, it is necessary to identify the drivers of the practice. If we can identify the drivers of child recruitment, we can also determine which of these drivers to target and then build our prevention and response strategy around that information. As mentioned above, not all factors will be relevant for a given practice, and social and gender norms will not necessarily always be at play. As such, social and gender norms form part of the different drivers that can influence social change and behaviours.

The drivers influencing our behaviour can be broadly put into three categories: (1) psychology – our personal thoughts/brain; (2) sociology – influence by the surrounding society; and (3) environment – the context and institutions that surround us.[29] Figure 2 displays the behavioural drivers model, which shows different factors that may influence a given behaviour across these three categories. Each category depicts different drivers that may influence a particular behaviour, such as community dynamics, attitudes, and governing entities.[30] Formative research can help to identify which drivers influence child recruitment, and our interventions should target these drivers to be effective. In other words, the behavioural drivers model shows *potential* drivers that may influence the practice of child recruitment and helps conceptualize how social and behaviour change programming can address this practice.

The key is to understand *why* child recruitment is happening or considered acceptable. Quantitative data such as data from the UN Monitoring and Reporting Mechanism (MRM)[31] in some country situations, national household surveys such as the Multiple Indicator Cluster Surveys, and existing research on the impact of armed conflict on children can be used to develop a contextual analysis mapping the prevalence and geographic scope of child recruitment. However, to understand *why* the practice is happening, qualitative research is also required. While it is beyond the scope of this article to outline practical tools, there are numerous resources on how to conduct quality social and behaviour change research.[32] Using

29 V. Petit and T. Zalk, above note 18.

30 For a detailed explanation and definition of these terms and how they can be applied, see V. Petit, above note 16.

31 The MRM is a UN Security Council-mandated mechanism (Resolution 1612) which enables the UN to monitor, document and verify grave violations against children in armed conflict. There are six grave violations: killing and maiming of children, recruitment and use of children, sexual violence against children, abduction of children, attacks against schools and hospitals, and denial of humanitarian access for children. Only incidents that are verified through primary sources (e.g. interviewing the child survivor or a primary witness to the violation such as a caregiver or first responder) are considered verified according to the MRM methodology. This means that the verification standard is set high and offers lots of detail, but it also means that the MRM by default cannot capture the full scope of grave violations against children; it can only claim to capture the tip of the iceberg. However, the richness of the data is used to draw trends and see patterns of violations against children in situations of armed conflict.

32 See overview of tools from different organizations through the Social Norms Learning Collaborative and ALIGN, available at: www.alignplatform.org/tools-identifying-diagnosing-social-and-gender-norms; and

research findings, we can establish and prioritize which behavioural drivers are influencing the practice that we want to change. For example, the formative research may identify social influence, self-efficacy and governing entities as having a key influence on the practice of child recruitment, meaning that we would need to build our programming with a focus on those drivers. The examples in the below section on "Putting It All Together" explain how the behavioural drivers model can be used to identify and analyze the drivers and couple them with interventions, mindful that all relevant factors driving a given behaviour would need to be addressed for the interventions to be effective.

Unpacking the idea: How to apply a social and behavioural approach to the issue of child recruitment?

To conceptualize potential drivers of child recruitment, it is necessary to identify the key groups of people who may have an influence on the practice of child recruitment (reference network). This can be done by conducting a mapping exercise of reference networks in the given context, and the roles that individuals (e.g., parents, teachers, community leaders, commanders) play in those networks. The mapping exercise should also map the types of relationships within and between the networks linked to the socio-ecological model.[33] In this paper, we are working with certain assumptions and available research around the drivers of child recruitment to illustrate what the use of a social and behavioural approach might look like in prevention and response efforts to child recruitment. As mentioned in the introduction, in practice formative research from the specific locality of intervention is needed to identify the drivers in each context.[34]

For the purposes of this paper, we will consider the following groups and corresponding networks in relation to child recruitment:[35]

- The recruiters (armed forces or armed groups).
- The recruited (children).
- The protective environment:
  - The community.
  - The parents/caregivers and families.
  - Peers/interpersonal.

These groups are interconnected, with various relationships between each other, and need to be explored at multiple levels. If we can understand the social and behavioural drivers that influence these actors, we may be able to understand

overview of social and behaviour change programming guides for different sectors, available at: www.thecompassforsbc.org/multi-sbc/search.

33 For more information, see Alliance for Child Protection in Humanitarian Action, above note 28.

34 For examples of formative research, see above note 5.

35 These groups are what the authors believe to be the main networks relevant in cases of child recruitment. We do not exclude other groups that may be of importance but have chosen to limit focus to these for the purposes of this paper. We also acknowledge that they may in many instances overlap with each other.

why children are recruited. Such information can inform the design of more effective and sustainable prevention and response interventions.

The community, parents, and peers are particularly important for children's "protective environment". These actors comprise the inner circles in the socio-ecological model: they are supposed to protect children from harm, although they may also cause harm.

The recruiters: Members of armed forces and armed groups

When applying a social and behavioural change lens to understand why armed forces and armed groups recruit boys and girls,[36] we must understand what governs the behaviour of these groups. Group membership builds on norms, socialization and behaviours that determine what is acceptable and what is not acceptable in a specific group. For example, police officers may use the behaviour of their peers as a guide to what constitutes an appropriate level of force.[37] In the same way, members of armed forces and armed groups may use the behaviour of other group members as an element in guiding whether recruitment and use of children in armed conflict is acceptable or not.

Studies by the International Committee of the Red Cross (ICRC) highlight the importance of analyzing the structure and level of centralization of armed groups, combined with identifying the sources of influence on how members of such groups behave, in order to develop meaningful engagements and interventions with those groups.

The ICRC's 2004 study on *The Roots of Behaviour in War*[38] focuses on the integration of IHL across all levels of armed forces and structured armed groups, and places emphasis on punishment as a key motivation for restraint. The 2018 follow-up study on *The Roots of Restraint in War*[39] goes deeper in exploring the decisive role of organizational structure, socialization, and value-based motivation in establishing restraint among soldiers and fighters across four different levels of organization. These four levels are integrated State armed forces, centralized non-State armed groups, decentralized non-State armed groups and community-embedded armed groups. Findings across the four categories of groups highlight that internalization of values through socialization is a more effective way of preventing IHL violations and promoting restraint than the threat of lawful

36 For the purpose of this paper, we are focusing on *how to identify* the reasons why armed forces or armed groups recruit children – the reasons are many and will differ from context to context. Evidence shows that children are recruited and used for various purposes and on various grounds. It may be the case that there is a utility in using children – e.g., children replace adults because fighting-age males are not available – or that children are more easily manipulated compared to adults due to their underdeveloped sense of right and wrong and are therefore targeted for recruitment by armed groups. See Siobhan O'Neil and Kato van Broeckhoven, *Cradled by Conflict: Child Involvement with Armed Groups in Contemporary Conflict*, United Nations University, Tokyo, 2018, pp. 45–47.

37 D. A. Prentice, above note 21.

38 Daniel Muñoz-Rojas and Jean-Jacques Frésard, *The Roots of Behaviour in War: Understanding and Preventing IHL Violations*, ICRC, Geneva, 2004.

39 Fiona Terry and Brian McQuinn, *The Roots of Restraint in War*, ICRC, Geneva, 2018.

sanction only; a combination of both is most effective. This indicates that understanding the social and behavioural drivers which govern armed groups can be key to promoting restraint, including preventing recruitment and use of children by armed forces and armed groups.

Building on findings from the two ICRC studies and drawing on the social and behaviour change theory and models presented above, the following sections explore hierarchical influences, peer group influences and external influences across the four levels of centralization in order to further determine how a social and behaviour change approach can be used to prevent the recruitment and use of children by armed forces and armed groups.

How social and behavioural drivers influence the behaviour of armed groups

The *Roots of Restraint in War* study highlights how examining differences in levels of centralization is important to understanding how to influence armed forces and armed groups, and the extent to which leaders can shift group members' behaviour depending on the level of centralization. In integrated armed forces and centralized armed groups, there is a strong chain of command where sub-commanders must follow the orders given by their senior leaders. These groups rely on clearly established rules and values.[40] In comparison, decentralized and community-embedded armed groups draw to a larger extent on shared values and traditions and less on codes of conduct.[41]

Leaders can shift group behaviour by demanding obedience, but also by actively shaping group norms. Research on social identity shows that a leader's level of ability to influence group norms is reciprocal to group members' perception of whether the leader is legitimate and fair.[42] At the same time, other group members may influence perceived norms. They can do so especially if their public behaviour calls attention to existing norms and they thereby use their behaviour to underline compliance with the norm, or to punish another person from deviating from the norm.[43] This supports the recognition that social interaction is influenced by the audience surrounding the behaviour. People may engage in different behaviour when they know others are observing; this is defined as "front stage behaviour" by Erving Goffman.[44] Front stage behaviour reflects social norms and expectations for behaviour shaped partly by the context, and the role a person plays in it. It can be habitual or subconscious.[45] "Backstage behaviour", on the other hand is how people act when they are free of social expectations and norms that influence their behaviour. In other words, recruiters

40 *Ibid.*, p. 23.
41 *Ibid.*, pp. 46–47.
42 M. E. Tankard and E. L. Paluck, in above note 26.
43 *Ibid.*
44 Erving Goffman, *The Presentation of Self in Everyday Life*, Overlook Books, 1974.
45 Nicki Lisa Cole, "Goffman's Front Stage and Back Stage Behavior", *ThoughtCo*, 2021, available at: www.thoughtco.com/goffmans-front-stage-and-back-stage-behavior-4087971.

may engage in public or front stage behaviour that follows the group norm, whether it violates or respects IHL, while their private opinion or backstage behaviour may be different.[46] As such, both social influence and private acceptance are at play in opinion change among members of armed forces and armed groups.

The ICRC's *Roots of Behaviour in War* study[47] finds that awareness of IHL, or favourable attitudes towards it, is not sufficient to produce a direct impact on the behaviour of combatants. Instead, there seems to be a "mismatch between the knowledge combatants have of humanitarian norms and their limited inclination to respect them in the event of hostilities".[48] The divide between the knowledge of IHL and refraining from violating IHL principles happens because combatants may be acting in contradiction to their personal opinion or morality. This is defined as "moral disengagement"[49] but can also be described as cognitive dissonance,[50] which occurs when behavioural decisions contradict personal thoughts and attitudes. This contradiction can be linked to peer group influence or social norms. In other words, even if combatants privately think that child recruitment is wrong, they may still engage in it if their group members and leadership endorse or demand it to align with normative expectations of how they should behave. Authority figures or leaders of the group, as well as other group members/peers, may constitute a reference network for the group members. A reference network can have a heavy social influence on the behaviour of group members because the opinion of those in the network matters to the individuals in the group. The influence of the reference network can be so strong that group members may follow the norms of the group even if those norms diverge from their own individual opinions or values – i.e., front stage versus backstage behaviour as outlined above.

A combination of fear of lawful sanctions (institutional signals) and social influence can be a very impactful source of influencing behaviour.[51] Accordingly, if the behaviour is linked to a social norm and the group structure is integrated or centralized, we can understand that when rules and orders are passed down through the chain of command, the combatants would comply based on the fact

46 Solomon E. Asch, "Opinions and Social Pressure", *Scientific American*, Vol. 193, No. 5, 1955; Solomon E. Asch, "Effects of Group Pressure upon the Modification and Distortion of Judgments", in Harold Steere Guetzkow (ed.), *Groups, Leadership, and Men: Research in Human Relations, Russell & Russell, New York, 1951*.

47 D. Muñoz-Rojas and J.-J. Frésard, above note 38.

48 *Ibid.*, p. 8.

49 The ICRC study identifies two key elements that cause "moral disengagement": (1) Justification of violations. The perpetrators see themselves as victims who need to act against the enemy before the enemy acts against them. They believe they are fighting an honourable cause while the opposing side is fighting for inadmissible interests that only deserve condemnation. If the enemy is guilty or suspected of violations of IHL, opposing combatants will argue that they are justified in not respecting it either, invoking a universal argument of reciprocity to justify their behaviour. (2) Dehumanizing the enemy. This relates to the psychology of the perpetrator and may involve demonizing the enemy to justify excessive means to an end, and denying, minimizing or ignoring the consequences of using excessive means by attribution of blame to the victim. *Ibid.*, pp. 8 ff.

50 Leon Festinger, *A Theory of Cognitive Dissonance*, Stanford University Press, Stanford, CA, 1957.

51 F. Terry and B. McQuinn, above note 39.

that (1) the message comes from their reference group and/or a leadership legitimized by the group, and (2) the combatants would have a normative expectation that other group members will also follow the chain of command. These two elements are further combined with (3) fear of sanction for not conforming to the group. In integrated armed forces or centralized armed groups, the most effective way of regulating combatant behaviour is not by influencing combatants at a personal level only but by influencing the people who have authority over them (the reference group), combined with the values of the peer/reference group to which the combatants listen because they consider that group to be credible.[52] For example, social bonds of "brotherhood" in armed groups have been found to override both patriotism and ideology as an incentive to fight.[53]

The strong role of peer influence underlines the importance of identifying and understanding the social norms that govern armed forces and armed groups at all levels of organization. This information can be used to proactively influence integrated armed forces' and centralized armed groups' behaviour towards refraining from recruiting children: if commanders issue rules that prohibit the recruitment and use of children, and the group members believe that there would be social sanctions from the group if they were to recruit children, there is reason to believe that the group would refrain from doing so. In other words, by capitalizing on the group structure, values and conformity of armed forces and centralized armed groups, and influencing members of the reference group (commanders and co-combatants), combined with the fear of sanctions, it may be possible to influence what is deemed acceptable behaviour by integrated armed forces and centralized armed groups and thereby prevent child recruitment. Some experiments have also resulted in reaching the "tipping point" for norm change where the opinions of peer groups seemed to play a key role in shifting combatants' views towards restraint.[54]

The example given in the "In Focus 2" box provides an example of how summary information – i.e., information about a reference group's opinion or behaviour – influenced the behaviour of armed groups through an Action Plan. In the example, information about how many IHL violations other armed groups had committed was communicated through score cards to incentivize a change in behaviour. This can also be a way of overcoming pluralistic ignorance, which occurs when individuals have factually wrong personal beliefs about prevailing social norms – for example, believing that most other armed groups recruit children, when in fact MRM statistics show that one particular group is responsible for the majority of recruitments. Decentralized and community-embedded armed groups do not always have written codes of conduct and have been found to draw more on shared values and traditions, making them more susceptible to social influence. A decentralized structure allows for a high degree of adaptability and enables "sub-group" identities that may diverge from the

52 *Ibid.*
53 *Ibid.*, p. 30.
54 *Ibid.*, p. 31.

In focus 2: Compliance with Action Plans

One tool used to prevent the recruitment and use of children by armed forces and armed groups is the UN Security Council-mandated Action Plans. An Action Plan is negotiated between the armed actor and the UN. It follows a set structure, which outlines the prohibition of the recruitment and use of children on the basis of IHL and international human rights law. The Action Plan also includes accountability measures against those members of armed forces or armed groups who violate the Action Plan and continue to recruit and use children. Such accountability measures are dealt with internally by the armed forces or armed groups and include demotion, delayed promotion, withholding salaries or stipends, dismissal or relocation. In some cases, the violation may also lead to a legal process, e.g. the party takes the alleged perpetrator to court.

An Action Plan is typically signed by the highest military commander of the armed forces or armed group and the highest UN representative and UNICEF representative in the country. The high-level engagement in an Action Plan is crucial in order for it be accepted and followed by lower-ranking levels of armed forces or armed groups. It provides weight as the highest commander (part of the reference group for combatants) can influence the behaviour of the other members of the armed forces or armed group (lower-ranking combatants). In other words, the structure of integrated armed forces and centralized non-State armed groups can be used as a positive advantage to alter behaviour. Once an Action Plan has been signed, it is disseminated within the armed forces or armed group. The members of the group learn about and adopt the content of the Action Plan, as well as the accountability measures against those who do not comply with the Action Plan going forward. The accountability measures in the Action Plan are forward-looking.

A fixed component of an Action Plan is the establishment of a complaint mechanism to lodge individual cases of child recruitment, geared towards remedial actions. The establishment of a complaint mechanism is a strong message by the leadership of a group to its membership. It is a public signal of the commitment of the leadership to accountability to the Action Plan.

An example of how accountability measures in an Action Plan can influence an armed group's behaviour can be found in Nepal, where an Action Plan was made in the context of a nationwide disarmament, demobilization and reintegration process. During this process, former fighters, including children, were demobilized in a number of cantonment sites, followed by community-based reintegration. The commitment of the signed Action Plan applied to all components of the armed group. The progress made under the Action Plan was tracked by the UN through a monitoring system, which included a report card. The report card was populated by the UN and discussed with the leadership of the armed group. The discussions took place under the

supervision of the cantonments/commanders and involved feedback to the armed group leadership on progress and bottlenecks in the implementation of the Action Plan. Progress on Action Plan implementation was more advanced for some cantonments/commanders compared to others who were lagging behind. The leadership of the armed group knew that in order to become delisted from the Secretary-General's Annual Report, every cantonment had to comply with the Action Plan. Therefore, the information shared by the UN was used by the armed group leadership to put pressure on the local commanders in the cantonments who were not delivering as expected. In this way, a combination of lawful sanction and peer group influence was used to change the behaviour of the armed groups towards refraining from the recruitment and use of children.

overall identity or ideology of the group.[55] Groups from local communities may form part of an overall group, which they adhere to while having decentralized structures of command. In this context, hierarchical influence becomes more fluid and may diverge at sub-levels, while socialization and sources of group norms that influence behaviour come to the fore with respect to identifying and understanding what drives the behaviour of the group. This indicates that while integrated or centralized armed groups can to a larger extent be influenced through the higher levels of the socio-ecological framework – i.e., structures and institutional systems – the influence on decentralized and community armed groups is more fluid across the socio-ecological framework, where local levels of influence may impact across individual, interpersonal/peer, local/community, societal and national/policy levels. For example, studies in Colombia[56] have found that cohesive and well-structured civilian communities can positively influence armed organizations and limit violence.

This suggests that the role of communities in limiting violence by armed groups can be leveraged to prevent recruitment and use of children. Communities' positive and negative agency is often overlooked. Paying attention to the community level of the socio-ecological framework can advance our thinking and approach in how to leverage positive agency towards non-acceptance of the recruitment and use of children. Furthermore, informal socialization processes of peer groups – i.e., social norms upheld by the reference network – are found to have as strong an influence on behaviour as formal mechanisms such as training.[57] This stresses the need to gain a better understanding of the socialization processes in armed groups and to consider ways of addressing group norms and practices that do not align with formal rules, such as child recruitment.

55 *Ibid.*
56 *Ibid.*, pp. 42–43.
57 *Ibid.*

External sources of influence such as values, traditions, ideology or community influence[58] can be enforced through individual behaviours or group summary information (see the above section on "What Is Social Norms Theory?"). In more centralized groups, hierarchical influences through institutionalized instructions and policies and lawful sanctions (institutional signals) may be more effective as tools of influence. The importance of local community, peer influence and social norms in the socialization of decentralized and community-based armed groups underlines the relevance of identifying the local drivers that influence the conduct of the group, thereby enabling us to alter that conduct. From a social and behaviour change perspective, this means that we need to leverage different levels of the socio-ecological framework depending on the level of centralization of the group in order to influence it.

In conclusion, in order to map ways to restrain violence, including child recruitment, it is necessary to understand the organizational structure, different types of authority and levels of influence of the groups concerned, as well as the networks linking key commanders and their constituencies. Using a social and behaviour change approach can enable an understanding of the inner workings of armed groups that can help us to identify these drivers of their behaviour towards violence or restraint.

Gendered impacts on the recruitment of boys and girls

As mentioned in the introduction, a key aspect to be considered in relation to armed forces and armed groups is the correlation of masculinity with the role and structure of these groups. Armed conduct is closely tied to stereotyped notions of power and manhood, and militaristic actions are supported by an ideology of male toughness.[59] This can also be defining for gender roles and has key implications for which type of roles boys and girls are used for in armed groups, and in turn how boys and girls use different strategies to navigate and survive (see the following section on "The Recruited"). There are examples of centralized armed groups such as the Revolutionary Armed Forces of Colombia – People's Army (Fuerzas Armadas Revolucionarias de Colombia – Ejército del Pueblo, FARC-EP) infusing an organizational culture that restrains certain forms of violence. Rape was against the rules of this armed group, linked to a narrative of "not who we are";[60] this shows how powerful reinforcing group norms can be in constraining certain types of behaviour. The FARC-EP specifically promoted certain norms as part of its training of recruits. The intensity of the training and who delivers it – i.e., whether the trainer is part of the combatant's reference network or not – was also found to matter.[61] This showcases how integrated and centralized armed groups

58 *Ibid.*

59 Dina Francesca Haynes, Fionnuala D. Ní Aoláin and Naomi R. Cahn, "Masculinities and Child Soldiers in Post-Conflict Societies", in Frank Cooper and Ann McGinley (eds), *Masculinities and Law: A Multidimensional Approach*, Minnesota Legal Studies Research Paper No. 10-57, 2011.

60 F. Terry and B. McQuinn, above note 39, pp. 39–43.

61 *Ibid.*

and armed forces may show restraint towards practices such as rape and child recruitment if interventions include hierarchical training on norms and values. It also highlights the relevance of applying a social and behaviour change approach in the organizational context to identify and understand the social and gender norms that dominate in a given group – including to identify the most effective training providers in an armed force or centralized armed group. With respect to decentralized and community-embedded armed groups, the studies in Colombia mentioned above, on how civilian communities can positively influence armed actors and limit violence, can be explored further using a social and behaviour change approach to map the positive community influences to be leveraged, including any social and gender norms that may be at play.

Understanding how the concept of masculinity impacts on the governance of both centralized and decentralized armed groups, by including a gender analysis, is essential to explaining the differing experiences of recruited boys and girls (this is explored further in the following section). A gender analysis[62] systematically unpacks the drivers of prevailing gender norms and power relations in a specific context and unveils different roles and norms for women and men, girls and boys, in the distribution of power, status, decision-making, resources, needs, opportunities and constraints. It also explores how gender intersects with age, race, disability, culture, ethnicity and/or other status. This knowledge is critical to preventing transition processes that may attempt to reconstruct the patriarchal, legal, social and cultural institutions which existed pre-conflict, instead of capitalizing on the opportunity to redefine them and avoid a continued cycle of violence.[63] This is important for prevention efforts with respect to understanding how the armed group operates, and for reintegration, reconciliation and peacebuilding efforts, which may provide the chance to change social and gender norms towards more equal and less violent societies.

The recruited: Boys and girls recruited and used by armed forces or armed groups

In this section we turn our focus to the core of the socio-ecological model: the children. In order to prevent and respond to child recruitment, it is crucial to understand why boys and girls join armed forces or armed groups. A United Nations University (UNU) study has identified a list of prosocial motivations that may influence children's agency to either join or stay with an armed actor; these are summarized in Table 1.

These prosocial motivations may increase children's vulnerability to recruitment and use by armed organizations and are likely to differ for some

62 For information and resources on gender analysis, see, for example, Jhpiego, "Gender Analysis Toolkit for Health Systems: Gender Analysis", available at: https://gender.jhpiego.org/analysistoolkit/gender-analysis/; Government of Canada, "What Is Gender Analysis?", available at: www.international.gc.ca/world-monde/funding-financement/gender_analysis-analyse_comparative.aspx?lang=eng.

63 D. F. Haynes, F. D. Ní Aoláin and N. R. Cahn, above note 59.

Table 1. *Factors that may drive children to join armed groups*

A need and wish to belong	Everybody wants to belong, and both boys and girls, particularly adolescents, struggle with belonging and identity. Armed forces and armed groups provide a ready-made community and identity through which children may get to feel a purpose, and these are elements that may be even more attractive in situations of insecurity and danger.
Quest for significance	We all have a desire to feel a purpose in life, and armed forces and armed groups may capitalize on this "quest for significance", including by taking advantage of feelings of insignificance that children may have experienced elsewhere.
Peer networks	Peers can have a strong influence on behaviour through role-modelling and/or reinforcing prevailing social norms. The effects of peer influence can be even stronger when combined with a need to belong.
Risk accumulation	Social risk factors found to increase children's probability of joining armed groups include exposure to violence, separation from family, poverty and other negative life events.
Impulsive behaviour	It is more common for children than for adults to display impulsiveness and risk-seeking behaviour when they are in the presence of their peers. Impulsive behaviour and risk-taking are also linked to the level of development of the brain in children and adolescents, which makes them less able to control their behaviour, especially in social and emotional situations.[64]
Bucking authority	Children may join armed groups because it gives them a sense of power and an opportunity to assert their autonomy. In addition, they may react against figures of authority who they feel threaten their agency.

Source: Authors' elaboration based on Rebecca Littman, *Children and Extreme Violence: Insights from Social Science on Child Trajectories Into and Out of Non-State Armed Groups*, United Nations University, New York, 2017.

children compared to others, which highlights the individual nature of children's trajectories into armed organizations. In addition, factors in the surrounding

64 Rotem Leshem, "Brain Development, Impulsivity, Risky Decision Making, and Cognitive Control: Integrating Cognitive and Socioemotional Processes during Adolescence – An Introduction to the Special Issue", *Journal of Developmental Neuropsychology*, Vol. 41, No. 1–2, 2016.

environment such as armed conflict, poverty,[65] climate change,[66] economic impacts,[67] education and employment opportunities may also contribute to boys' and girls' decisions to join armed organizations.[68]

Although the focus here is on prosocial motivations, it is important to note that these factors do not operate in isolation. Linked to the prosocial motivations highlighted in Table 1, three key factors should be taken into consideration when seeking to identify social and behavioural drivers from the perspective of recruited children: agency, age and gender.

It is important to acknowledge boys' and girls' agency in their association. The debate as to whether children can be considered to have joined an armed actor voluntarily is ongoing.[69] However, to consider boys and girls as involuntarily recruited without any agency could undermine their prospects for reintegration. For some boys and girls, the time spent with an armed actor includes aspects of learning, growth and a sense of empowerment or bucking authority as described by the UNU study. This could include a strengthened understanding of structure and hierarchy and a feeling of belonging and comradery. To dismiss these aspects of children's experience by default and deny their agency could impact their capacity to reintegrate by failing to understand their trajectory, which in turn will make it difficult to tailor an effective response.[70] For recruited children, there is no linear trajectory from victim to perpetrator; instead, children are situated in a grey zone of being both victim *and* perpetrator.[71] Regardless of the nature of the association, however, the Paris Principles state that boys and girls engaged with armed forces or armed groups should primarily be understood as victims of offences against international law and not as perpetrators.

As we saw from the UNU study, the possible prosocial motivations for children's association with armed forces and armed groups resonate with the formative years of adolescence:[72] the need to belong, the quest for significance, peer networks and impulsive behaviours. The age and agency dynamics play a particular role for adolescents as they are exploring who they are and who they want to become, which requires not only room for decision-making but also an environment that helps and guides them in taking those decisions. They are more

65 Vera Achvarina, Ragnhild Nordås, Siri Aas Rustad and Gudrun Østby, "Regional Poverty and Child Soldier Recruitment: A Disaggregated Study of Sub-National African Regions 1990–2004", conference paper presented at 48th Annual Meeting of the International Studies Association, 28 February–3 March 2007.

66 Zorzeta Bakaki and Roos Haer, "The Impact of Climate Variability on Children: The Recruitment of Boys and Girls by Rebel Groups", *Journal of Peace Research*, Vol. 60, No. 4, 2022.

67 Christopher Blattman and Jeannie Annan, "The Consequences of Child Soldiering", *Review of Economics and Statistics*, Vol. 92, No. 4, 2010.

68 Rachel Brett, "Adolescents Volunteering for Armed Forces or Armed Groups", *International Review of the Red Cross*, Vol. 85, No. 852, 2003.

69 S. O'Neil and K. van Broeckhoven, above note 36.

70 R. Brett, above note 68.

71 Rose Khan, "Child Soldiers Complicate Gender Roles of Victim and Perpetrator", London School of Economics and Political Science, 2020, available at: https://blogs.lse.ac.uk/africaatlse/2020/01/10/child-soldiers-complicate-gender-roles-of-victim-and-perpetrator/.

72 There is no legal definition of "adolescent". We refer to the definition used by the UN, which defines individuals between the ages of 10 and 19 as adolescents.

likely to make risky choices with short-term benefits, which could have significant consequences if a child joins armed forces or an armed group. Impulsive behaviours make children even more sensitive to social sanctions, which makes it easier for armed forces or armed groups to strategically influence their behaviour by exposing them to social and gender norms and behaviours that endorse violence. Armed groups often encourage violent behaviour, and this may lead group members, particularly adolescents and children who are keen to adopt group norms, to perceive violence as behaviour that is wanted and desirable by the group. Importantly, this belief does not necessarily mean that the child has a personal desire to engage in violent behaviour.[73] Children might conform to violent behaviour based on a normative expectation that this is what is expected from them by the group, combined with social reward rather than sanction.

The experience of boys and girls is likely to differ based on social and gender norms.[74] For girls, gender inequality and gender roles often reflect the risks they may face during their association, including sexual exploitation and/or being used as housekeepers, cooks, and to look after children of combatants belonging to the armed forces or armed groups.[75] The risk of gender-based violence may also be a driver for girls' association. Girls may join armed groups to break free from social norms limiting their freedom and to avoid gender-based violence, including child marriage. A study from Jordan found that drivers of women's and girls' engagement in groups practicing extreme violence were linked to social and family problems, including domestic violence and prevention of their access to rights such as inheritance.[76] Physical, emotional and sexual abuse within families have also been cited by girls and women in Colombia as a reason for their association with armed organizations.[77] Girls may also be recruited for combatant roles. One example of this is the force known as the Kurdish People's Protection Units in northeast Syria, which includes an all-female militia called the Women's Protection Units (Yekîneyên Parastina Jin, YPJ).[78] The UN has verified over 150 girls recruited by Kurdish armed groups since 2013 and several of these girls were in combat roles, armed and in uniforms, for example while guarding checkpoints.[79] For some of these girls, the drivers for their recruitment included the possibility of escaping traditional

73 Rebecca Littman, *Children and Extreme Violence: Insights from Social Science on Child Trajectories Into and Out of Non-State Armed Groups*, United Nations University, New York, 2017.

74 Alliance for Child Protection in Humanitarian Action, *Girls Associated with Armed Forces and Armed Groups: Lessons Learnt and Good Practices on Prevention of Recruitment and Use, Release and Reintegration*, 2020.

75 *Ibid.*, p. 8; J. Ward and L. Stone, *Children Associated with Armed Forces and Armed Groups and GBViE Programming*, UNICEF GBViE Helpdesk, London, 2018, pp. 6–7.

76 UN Women, *Women and Violent Radicalization in Jordan*, 2016.

77 Alliance for Child Protection in Humanitarian Action, above note 74, p. 7; J. Ward and L. Stone, above note 75, p p. 8.

78 Alliance for Child Protection in Humanitarian Action, above note 74.

79 *Children and Armed Conflict in the Syrian Arab Republic: Report of the Secretary-General*, UN Doc. S/2018/969, 30 October 2018.

gender roles and discrimination such as child marriage and domestic violence,[80] as well as ideology and financial aspects.[81]

Gender norms do not only impact girls' experiences with armed forces or armed groups. Prevalent gender norms dictating boys' behaviour are equally destructive. Concepts around masculinity, power, pride and honour, as well as the perception of boys and men as protectors and breadwinners and as being inherently more violent than girls and women, may contribute to boys' engagement with armed forces and armed groups.[82] Additionally, as described in the above section on "The Recruiters", meta-norms such as hyper- or toxic masculinity may often dominate the governance and hierarchy of armed forces and armed groups. While it is beyond the scope of this article to further unpack this, gender is and must be a critical part of the analysis of social and behavioural drivers of child recruitment.[83] The Communities Care Programme in Somalia is an example of programming that has contributed to shifting harmful social norms that contribute to sexual violence into positive social norms that promote women's and girls' equality, safety and dignity.[84]

In focus 3: Girls and reintegration efforts

Failing to acknowledge the specific vulnerabilities and experiences of girls has resulted in girls falling between the cracks in release and reintegration efforts. For example, lessons learned from disarmament, demobilization and reintegration (DDR) programmes indicate that girls were less likely to be released because the definition used were influenced by gender norms. A key criterion for accessing DDR services has been the possession of a weapon and the ability to assemble and disassemble it. Girls, who in many instances were in support roles such as cooks, porters, "wives" or informants, rarely carried weapons and were thus overlooked.[85]

A social and behavioural change perspective would consider social and gender norms and/or behavioural drivers that enabled the recruitment of children and include those aspects in the DDR programme design. For example, association with armed forces or armed groups may come with significant stigma, especially for girls in the reintegration process. There are often assumptions building on prevailing gender norms, which reflect how girls are valued or

80 S. O'Neil and K. van Broeckhoven, above note 36, pp. 117–123.
81 J. Ward and L. Stone, above note 75, p. 9.
82 D. F. Haynes, F. D. Ní Aoláin and N. R. Cahn, above note 59.
83 For more on conducting gender analysis in the context of child recruitment, see Alliance for Child Protection in Humanitarian Action, above note 2.
84 *Ibid.*, p. 79.
85 Alliance for Child Protection in Humanitarian Action, above note 74.

> devalued in society. They may be devalued if they have lost their virginity. If they have given birth to a child with a father from the "enemy", this can lead to further rejection from the family and community. It may also be difficult for girls who had leadership or combat roles to adapt back into the traditional gender-stereotyped expectations which may prevail in the community that they come from.[86]

The protective environment

Addressing some of the potential drivers described in the preceding sections requires the involvement of parents/caregivers, peers and communities. These are the closest spheres of influence and protection, but they may also be the drivers for children's association with armed organizations.[87]

Communities

Through community engagement, awareness-raising and parenting support, it is possible to tap into and build the protective sphere around children. As seen in the above section on "The Recruiters", communities can play a decisive role in limiting violence by armed forces and armed groups by employing a range of different strategies. This indicates that cohesive communities can play a key role in preventing recruitment and use of children. While each group will need to be analyzed and addressed with specific interventions, the community leadership, specific community members, youth leaders, religious leaders and family members may all play individually and collectively important roles in preventing and dissuading children from joining armed organizations. As such, it is equally important to map community practices that protect boys and girls from harm. Mapping these community strategies can be a starting point for engaging with communities on the prevention of child recruitment and can inform broader prevention strategies.

Parents/caregivers

In its study on children's involvement with armed groups,[88] the UNU also explores the family as a driver for children's association with armed groups. One cited study from the International Labour Organization's International Labour Office explores the experience of youth who had joined armed groups in the Democratic Republic of the Congo. This study reveals that the difference between the formerly recruited youth and their peers who had not joined armed groups was in fact that the

86 *Ibid.*

87 Rachel Brett and Irma Spect, *Young Soldiers: Why They Choose to Fight*, International Labour Office, Lynne Reinner, Boulder, CO, 2004; S. O'Neil and K. van Broeckhoven, above note 36.

88 R. Littman, above note 73.

formerly recruited youth also had relatives who belonged to the armed group.[89] In the cited study, 57% of surveyed youths who had joined an armed group had a father or brother who also belonged to an armed group.[90] Parents and families may also encourage their children's association with armed groups, as in Rwanda, where parents of children formerly associated with an armed group spoke proudly about how they had instigated their children's association.[91]

In order to understand and address the root causes of these attitudes and behaviours, it is crucial to unpack the drivers behind them. A decisive factor for a child becoming more vulnerable to recruitment may be a social norm that child involvement in armed conflict is accepted, which in turn may make parents susceptible to letting their children join armed groups, given normative expectations – i.e., they think this is what their reference group (the community) thinks they should do, and they worry about sanctions if they keep their child home. In conflict contexts, communities may become accustomed to the presence of conflict, making it a new "normal", but this doesn't necessarily mean that a positive norm towards child recruitment has been established. The combination of immense environmental stressors caused by conflict, food scarcity and economic hardship may push community members to "allow" children's association with armed organizations to continue, while they do not personally agree with the practice. Anecdotal evidence from practitioners tells us that in households that have no actual choice in letting children join or not, and where a child is recruited against the family's will, it may lead to excessive guilt. This can create cognitive dissonance where, in order to cope, the family creates beliefs built on justifications for giving in to the pressure of the armed group in order to reduce the dissonance between what they think and what they do/did.

The UNU study also mentions family violence, domestic violence and oppressive family environments as factors for understanding boys' and girls' trajectories into armed organizations.[92] As stated earlier, girls may join armed organizations to avoid domestic and sexual violence. For example, in Nepal, girls have stated that they joined the Maoists to avoid abusive or arranged marriages.[93] Girls in northeast Syria also cited early marriage as a reason for joining armed organizations.[94]

Peers

As illustrated in the above section on "The Recruited", adolescents appear to be particularly vulnerable to recruitment and use. When children enter adolescence,

89 International Labour Office, *Wounded Childhood: The Use of Children in Armed Conflict in Central Africa*, Geneva, 2003, available at: www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_ent/@ifp_crisis/documents/publication/wcms_116566.pdf

90 *Ibid.*, p. 36.

91 *Ibid.*

92 S. O'Neil and K. van Broeckhoven, above note 36, pp. 50–51.

93 *Ibid.*, p. 51

94 *Ibid.*, p. 117.

peers often become more influential compared to earlier in their lives, when parents/caregivers and other family members may have played the more important role. According to child psychology studies, adolescents' exposure to deviant peers can be linked to an increase in delinquent behaviours.[95] Similar to family members, peers can have an influence on children's trajectories with armed groups; studies from Nigeria, Jordan and Somalia show how peers influenced children's association with such groups.[96] Therefore, understanding peer influence is a key component in the mix of drivers that may lead children to join armed organizations.

The behaviours and attitudes of the actors in the inner circles of the socio-ecological framework can become drivers of boys' and girls' association with armed groups and armed forces, but they also make up children's most important safety net. There are good examples and evidence of working with families, peers and community members using social and behaviour change strategies to prevent and respond to child protection concerns such as female genital mutilation and child marriage.[97] There is also a growing body of evidence and tools relating to parenting programmes[98] for violence prevention built on social and behaviour change strategies.

Importantly, efforts in the inner circles of the socio-ecological framework must be linked to the outer circles as well – i.e., the institutional and policy level. Local and national authorities, education and social protection systems, laws and legislation etc. must be leveraged to address structural and institutional factors that may constitute drivers of child recruitment, such as lack of access to school and the absence of inheritance rights for women. As per the behavioural drivers model, structural factors form part of the drivers that influence behaviour and must therefore form part of the analysis of drivers of child recruitment. A newly released programme development toolkit on prevention and reintegration of children associated with armed forces and armed groups (CAAFAG) also examines risk factors across the socio-ecological framework and illustrates how these play a key role in addressing child recruitment.[99] Additionally, it refers to how social and cultural norms may have a significant impact on the prevention of recruitment and highlights the need to influence these through transformative programmes as part of prevention strategies.[100]

95 Mary Gifford-Smith, Kenneth A. Dodge, Thomas J. Dishion and Joan McCord, "Peer Influence in Children and Adolescents: Crossing the Bridge from Developmental to Intervention Science", *Journal of Abnormal Child Psychology*, Vol. 33, No. 3, 2005.

96 S. O'Neil and K. van Broeckhoven, above note 36, p. 53.

97 See, for example, the Saleema Initiative (Sudan), Grandmother Project (Senegal), Instituto Promundo (global) and SASA! (Uganda), referenced in above note 1.

98 UNICEF, *Designing Parenting Programmes for Violence Prevention: A Guidance Note*, 2020, available at: www.unicef.org/media/77866/file/Parenting-Guidance-Note.pdf.

99 Alliance for Child Protection in Humanitarian Action, above note 2, pp. 13–14.

100 *Ibid.*, p. 73.

	Psychology	Sociology	Environment
Recruiters	'Moral disengagement' by justification of violence dehumanising the enemy, (attitude)	Belief that commander and peers will sanction recruiters if they do not recruit children (social influence)	Engaged in armed conflict and in need of combatants (lack of alternatives), IHL Receiving orders (communication)
Recruited	Sense of belonging (interest)	Influence from peers and family members (social influence)	Out of school, lack of economic and social opportunities (structural barriers)
Parents/caregivers of recruited children	Parents/caregivers privately do not support the recruitment of children (attitude)	Belief that community members will sanction parents/caregivers if they do not allow their children to join armed forces or armed groups (community dynamic and social influence)	Lack of economic opportunities, killed or injured breadwinner, (structural barriers)

Figure 3. Framework for CAAFAG programming with a social behavioural change lens and potential drivers.

Putting it all together: How can a social and behaviour change approach inform prevention and reintegration programming?

With reference to the previous sections, for a social and behaviour change approach to be effective in prevention and reintegration programming, it is necessary to understand the social norms and behaviours of the different groups involved (the recruiters, the recruited and the protective environment).

Figure 3 uses concepts from the behavioural drivers model and exemplifies how the behaviour of the recruiters, the recruited, and parents/caregivers (as part of the protective environment) of the recruited *may* be influenced by drivers of psychological, sociological and environmental character in a context of child recruitment.

A social and behaviour change approach can inform prevention and reintegration efforts as well as enabling a response that bridges the humanitarian, development and peace nexus. Changing behaviours requires long-term investment and engagement, but it will help to prevent the behaviours enabling child recruitment to grow among children, families, communities, armed forces and armed groups, governing institutions, and authorities, impeding it from becoming a social norm across the concentric circles of the socio-ecological framework. In other words, using a social and behavioural change approach can inform prevention and reintegration programming because it helps to answer the question of *why* children are recruited from the perspective of the key actors and entities across the socio-ecological framework. If we know the behavioural drivers behind child recruitment, we can better apply the most effective programmatic interventions to prevent it from happening in the first place.

The examples below illustrate how findings and interventions can be coupled for each of the groups examined (the recruiters, the recruited and the protective environment), mindful that all relevant factors driving a given behaviour would need to be addressed for each group in order for the interventions to be effective.

With reference to the behavioural drivers model shown in Figure 2, formative research may identify **social influence**, **self-efficacy** and **community dynamic** as having a key influence on the practice of child recruitment. This means it would be necessary to build our programming with a focus on these drivers.

- At the level of the recruiters, **social influence** may be found to be a key factor driving armed forces or armed groups to recruit children. The formative research may find that attitudes and practices of the peer group (reference network), combined with fear of stigma, are the key dimensions of social influence driving armed forces or armed groups to recruit children. As highlighted by the ICRC studies mentioned earlier, recruiters may overrule their own private opinions in order to comply with the group behaviour. In that case our interventions would need to address social influence, for example through engaging commanders to make commitments through Action Plans, and a positive deviance/group summary information approach as exemplified in the "In Focus 2" box above, combined with influencing the social identity of the group.
- At the level of the recruited children, **self-efficacy** may be found as a key factor; the formative research may find that lack of a sense of belonging, skills and confidence are key dimensions or push factors that cause children to join armed forces or armed groups. These would need to be addressed in order to provide the children with alternatives to recruitment. Access to education and life skills training combined with psychosocial support may provide for increased self-efficacy and sense of belonging and contribute to making children more resilient to recruitment.
- At the level of communities, formative research may identify dimensions of **community dynamics** that can be used as entry points to work with community cohesion and authority in order to disincentivize armed forces and armed groups with respect to the recruitment and use of children – especially if recruiting children would cause sanctions affecting the ability of the armed group to maintain its presence and leverage traditional community structures or distribution of power, in the case of decentralized or community-embedded armed groups.
- At the level of parents/caregivers, the formative research may find that **structural barriers** linked to economic difficulties are a push factor causing parents/caregivers to let their children join armed forces or armed groups. Here, cash transfer programmes could be considered to help families keep their children at home and in school.
- At the level of peers, the formative research might find that dimensions of **interest** – i.e., peer group pressure combined with wanting to belong to a group – are factors that may deem it more likely for children to join armed groups. To create a positive alternative, establishing youth clubs and fostering dialogue among peers about the challenges they face in their daily lives and

the risks of joining armed groups may help children to obtain peer support that will make them more resilient against joining armed groups.

Longer-term engagement can be bridged by integrating child protection efforts across programming dimensions and sectors, including education, health and gender, in order to leverage these in prevention and response strategies for child recruitment. The contextual drivers of child recruitment and their negative impact on children cannot be significantly controlled and influenced by one sector alone. These drivers include deeply rooted poverty and mistrust in institutions; limited offers of critical opportunities such as free, compulsory schooling; inadequate livelihoods for households; impunity of child recruiters and operating modalities by the security sector that conflict with the best interests of the child; social and gender norms driving the normalization of weapons; negative masculinity; and the use of violence to meet political or security needs. As such, prevention and reintegration requires a multisectoral response. This article suggests that such a response can be better leveraged through a social and behaviour change approach.

Conclusion

The authors of this paper see great potential in using social and behaviour change strategies to help prevent and respond to the recruitment and use of boys and girls by armed forces and armed groups. If we do not tackle the social and gender norms and behaviours enabling child recruitment, they may continue to grow and become more accepted across the socio-ecological framework. Using social and behaviour change approaches can inform prevention and reintegration programming because it helps to answer the question of *why* children are recruited from the perspective of the key actors and entities across the socio-ecological framework. While we do not yet have all the answers, this article has aimed to provide some pieces of the puzzle on how to apply the social and behaviour change approach to address child recruitment. We hope that this article will serve as inspiration for further reflection and discussion on developing evidence-based social and behaviour change interventions to end the recruitment and use of boys and girls in armed conflict.

International Review of the Red Cross (2023), **105** (924), 1758–1759.
Protecting the Environment in Armed Conflict
doi:10.1017/S1816383123000486

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REPORTS AND DOCUMENTS

Chair's Summary Report of State Expert Meeting on International Humanitarian Law: Protecting the Environment in Armed Conflicts

The "State Expert Meeting on International Humanitarian Law: Protecting the Environment in Armed Conflicts", organized by Switzerland and the International Committee of the Red Cross (ICRC) for States party to the Geneva Conventions, was held in early 2023. The meeting brought together nearly 400 experts from ministries of defence, the environment and foreign affairs from over 120 countries to share national experiences, challenges and good practices related to the protection of the environment in armed conflicts. In addition, expert resource persons from the UN Environment Program, the UN International Law Commission and the International Union for Conservation of Nature supported the exchanges. The meeting's purpose was to progress on the national implementation of international humanitarian law relating to the protection of the natural environment in armed conflicts. The Chair's Summary prepared by Switzerland and the ICRC reviews the contents of the meeting, including the good practices shared, and can be drawn upon to enhance environmental

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protection in war. It can be found in Arabic, Chinese, English, French, Russian and Spanish at: www.icrc.org/en/document/chairs-summary-report-state-expert-meeting-ihl-protecting-natural-environment-armed.

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Printed in Great Britain by Henry Ling Limited, The Dorset Press, Dorchester, DT1 1HD

Cover Photo: The sign in the photo reads "Warning for your safety: the water is polluted and swimming is not allowed." Though the body of water in the photo was not directly contaminated by armed conflict, its pollution is the result of conflict-related damage to critical infrastructure. Credit: ICRC.

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Volume 105 Number 924

International **Review** of the Red Cross

ICRC
ISSN 1816-3831

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