

Water, international peace, and security

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Abstract

Water scarcity, accelerated by climate change, affects water availability and may threaten peace and security. This role of water, as a contributing factor for triggering wars, sheds light on the significance of the protection of water during armed conflict. Keeping water out of war not only contributes to preserving an indispensable natural resource for life but also serves as a tool for the hostile parties to start negotiations, building trust and peace.



The uneven distribution of water resources, and the competition between the multiple uses of those resources combined with the growth of the world's population has given rise to a debate on future 'water wars'. While some predict such wars,¹ others indicate that no 'water war' has taken place since 4,500 years ago.² According to the latter view, increased competition for water could become the catalyst for more intense co-operation in the future.³ Beyond the arguments about the existence of 'water wars', when one looks at the interactions between riparian states over shared water resources, it may be noticed that those interactions include forms of both conflict and co-operation between states.⁴

Naturally, water is the most abundant resource on earth. However, only a small quantity – around 2.53% – of it is freshwater that can be used for agriculture, human consumption, and industrial purposes. Moreover, a significant part of this freshwater is locked up in ice or in groundwater resources. Some of those resources, having insignificant or no source of recharge by surface waters, can become non-renewable resources and risk being exhausted.⁵ As a scarce resource, water has the potential for triggering conflict and these may become increasingly important as water scarcity is accelerated by human factors.

One of the main concerns regarding the possibility of conflict over water, is the occurrence of armed hostilities between states. Hostilities may take several forms, such as intra-state armed conflicts, national violence, skirmishes, and occupation of a territory.⁶ In looking at the linkage between water and international peace and security, one may consider water not only as a factor triggering war but also as a weapon and an objective of armed conflict, often a neglected topic in studies on the relationship between water and armed conflict.⁷ Finally, limitations on access to water and the environmental damage to water resources caused by armed conflict endanger the security of a population as a whole, rendering the return to peace longer and more difficult in countries affected by war.

The objective of this article is to look at the linkage between water and international peace and security, highlighting the potential of water as a path for contributing to the return to peace. First, the article will analyse the role of water scarcity as one of the causes in triggering armed conflict. It will focus on a number of international documents dealing with the role of water in the maintenance of international peace and security. In this context, the practice of the United Nations Security Council will also be addressed. Then, the article will turn to the norms of international humanitarian law ensuring the protection of water in time of armed conflict. Beyond international humanitarian law, norms of other areas of

- 1 See Joyce R. Starr, 'Water wars', in *Foreign Policy*, No. 82, 1991, pp. 17–36; John Bulloch and Adil Darwish (eds), *Water Wars: Coming Conflicts in the Middle East*, Victor Gallanz, London, 1993.
- 2 Aaron T. Wolf, 'Conflict and cooperation along international waterways', in *Water Policy*, Vol. 1, No. 2, 1998, pp. 251–265.
- 3 The adoption of more than 3,600 international water agreements is suggested as evidence of cooperation on water resources. See Jesse H. Hammer and Aaron T. Wolf, 'Patterns in international water resource treaties: the Transboundary Freshwater Dispute Database', in *Colorado Journal of International Environmental Law and Policy*, Vol. 9, 1998, pp. 157–177.
- 4 See Mark Zeitoun and Naho Mirumachi, 'Transboundary water interaction I: reconsidering conflict and cooperation', in *International Environmental Agreements: Politics, Law and Economics*, Vol. 8, No. 4, 2008, pp. 297–316; David Philips, Marwa Daoudy, Stephen McCaffrey, Joachim Ojendal, and Antony Turton, *Transboundary Water Cooperation as a Tool for Conflict Prevention and for Broader Benefit-Sharing*, Ministry of Foreign Affairs, Sweden, Stockholm, 2006, p. 15; United Nations Development Programme (UNDP), Human Development Report, *Beyond Scarcity: Power, Poverty and the Global Water Crisis*, 2006, p. 203, available at: <http://hdr.undp.org/en/media/HDR06-complete.pdf> (last visited 27 September 2010); UNESCO–Green Cross International Initiative, *Water Security and Peace: A Synthesis of Studies Prepared under the PCCP–Water for Peace Process*, compiled by William J. Cosgrove, pp. 9–18, available at: <http://www.unwater.org/wwd09/downloads/133318e.pdf> (last visited 24 September 2010).
- 5 Gabriel Eckstein, 'A hydrogeological perspective of the status of ground water resources under the UN Watercourse Convention', in *Columbia Journal of Environmental Law*, Vol. 30, No. 3, 2005, pp. 558–561.
- 6 On the role of water as a strategic resource indispensable for pursuing economic and social development in a state, see Frédéric Lasserre and Luc Descroix, *Eaux et territoires: Tensions, coopérations et géopolitiques de l'eau*, 2nd edition, Presses de l'Université du Québec, Canada, 2005, pp. 17–32.
- 7 However, there are a few studies that have been devoted to this topic: see *Water and War: Symposium on Water in Armed Conflict*, Montreux 21–23 November 1994, International Committee of the Red Cross (ICRC), Geneva, 1994; Ameer Zemmali, 'La protection de l'eau en période de conflit armé', in *International Review of the Red Cross*, No. 815, 1995, pp. 601–615; Théo Boutruche, 'Le statut de l'eau en droit international humanitaire', in *International Review of the Red Cross*, No. 840, 2000, pp. 887–915; Nicolai Jorgensen, 'The protection of freshwater in armed conflict', in *Journal of International Law and International Relations*, Vol. 3, No. 2, 2007, pp. 57–96.

international law contribute to the protection of this vital natural resource. They include human rights law and the law on transboundary water resources. Thus, in the final section, the article will examine the contribution of those areas of international law to the protection of water during armed conflict.

Water scarcity as a cause for armed conflict

Causes that may bring on conflict over water include natural and human factors. Among the human causes are the degradation of freshwater resources⁸ and the impacts of climate change.⁹ Many regions that are already relatively dry, such as the Middle East and North Africa, are likely to experience further decreases in water availability. Moreover, availability of water is also likely to be reduced by the decline of water supplies stored in glaciers and snow cover. As an illustration, climate-change-induced glacial melt in the Himalaya, which is the source of the ten largest rivers in Asia, risks affecting half a billion people in the Himalayan region. Finally, climate change will also have an impact on the quality of water. Increasing water temperatures may raise the threat of toxic substances in drinking water.¹⁰

Climate change risks accelerating drought and desertification, and those phenomena could lead to a loss of agricultural land and a decrease of food production and water supplies. A significant example of this is the impact of climate change on water availability in Sudan. According to the United Nations Environment Programme (UNEP), climate change has reduced agricultural production owing to a decline in rainfall and this is a contributing factor for the conflict in

8 On the degradation of freshwater resources, see WWF, *World's Top Ten Rivers at Risk*, 2007, available at: http://www.unwater.org/downloads/worldstop10riversatriskfinalmarch13_1.pdf (last visited 7 September 2010).

9 The Intergovernmental Panel on Climate Change (IPCC) issued a technical paper on climate change and water in 2008. The paper indicates that '[t]here is abundant evidence from observational records and climate projections that freshwater resources are vulnerable and have the potential to be strongly impacted by climate change'. It also notes that, although water agreements improve transboundary water management, '[c]limate change and increased water demand in future decades will represent an added challenge to such framework agreements, increasing the potential for conflict at the local level. For instance, unilateral measures for adapting to climate-change-related water shortages can lead to increased competition for water resources'. Intergovernmental Panel on Climate Change, *Climate Change and Water*, Technical paper VI, 2008, p. 135 and p. 66 respectively, available at: <http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf> (last visited 7 September 2010). See also the Annex to the Letter dated 5 April 2007 from the Permanent Representative of the United Kingdom and Northern Ireland to the United Nations addressed to the President of the Security Council, S/2007/186, para. 7(b) and (d) and the Secretary-General's *Statement at the Security Council debate on energy, security and climate*, New York, 17 April 2007, available at: http://www.un.org/apps/news/infocus/sgspeeches/search_full.asp?statID=79 (last visited 7 September 2010).

10 Office of the United Nations High Commissioner for Human Rights (OHCHR), *Climate Change and the Human Rights to Water and Sanitation*, Position Paper, 2010, pp. 18–20, available at: http://www2.ohchr.org/english/issues/water/ixpert/docs/Climate_Change_Right_Water_Sanitation.pdf (last visited 7 September 2010). See also Gabriel Eckstein, 'Water scarcity, conflict, and security in a climate change world: challenges and opportunities for international law and policy', in *Wisconsin Journal of International Law*, Vol. 27, 2010, pp. 409–461.

Darfur.¹¹ Climate change is therefore an issue that fuels the debate over conflicts triggered by water, by accelerating droughts and scarcity of water resources.¹²

The analysis on the linkage between water and armed conflict finds its origin in the studies on the role of environmental factors as drivers of conflict between states. Environmental security studies have underlined the role of water as the potential trigger for armed struggles,¹³ and several analyses have seen the Middle East as the ideal scenario for ‘water wars’. Water was considered as the main issue of several wars in the past and it is assumed likely to trigger new wars in the future.¹⁴ This scenario is not completely new, since some similar analyses have been made in regard to oil.¹⁵ Along with the scarcity of water resources, the shared character of some international watercourses such as the Jordan river and the Nile river have been mentioned as factors that would be able to trigger conflicts in the regions of the Middle East and North Africa.¹⁶

Between the 1990s and the 2000s, the debate over water and armed conflict changed its contours. Analysis of the scarcity of water resources and its relation to armed conflict was accompanied by the study of other factors such as population growth and inequitable allocation of natural resources.¹⁷ The idea that water scarcity could be the only cause of a conflict, along with that of the existence of ‘water

- 11 UNEP, *Sudan: Post-Conflict Environmental Assessment*, 2007, p. 84, available at: http://postconflict.unep.ch/publications/UNEP_Sudan.pdf (last visited 7 September 2010).
- 12 The United Nations Secretary-General, Ban Ki-moon, indicated in his statement to the Security Council on 7 July 2010 that ‘[a]rmed conflict ... is often the result of a lack of good governance, competition for scarce resources, the complex interaction of factors including ethnicity, or all of these combined. Climate change, desertification and land disputes can be additional drivers of conflict’. Secretary-General, SG/SM/130003, SC/9974, 7 July 2010, available at: <http://www.un.org/News/Press/docs//2010/sgsm13003.doc.htm> (last visited 7 September 2010). The former Britain Defence Secretary, Mr. John Reid, pointed out the linkages between the risks of violent conflicts, climate change, and lack of access to water supplies. See Ben Russell and Nigel Morris, ‘Armed forces are put on standby to tackle threats of wars over water’, in *The Independent*, online edition, 28 February 2006, available at: <http://www.independent.co.uk/environment/armed-forces-are-put-on-standby-to-tackle-threat-of-wars-over-water-467974.html> (last visited 7 September 2010).
- 13 For example Arthur H. Westing affirms that ‘competition for limited supplies of fresh water ... leads to severe political tensions and even to war’. Arthur H. Westing, ‘Environmental factors in strategic policy and action: an overview’, in Arthur H. Westing (ed.), *Global Resources and International Conflict: Environmental Factors in Strategic Policy and Action*, Oxford University Press, New York, 1986, p. 9. In this book see also the article of Malin Falkenmark, ‘Fresh waters as a factor in strategic policy and action’, in A. H. Westing, *ibid.*, pp. 85–113. See also Jessica Tuchman Mathews, ‘Redefining security’, in *Foreign Affairs*, Vol. 68, No. 2, 1989, pp. 162–177.
- 14 See Wilfried Remans, ‘Water and war’, in *Humanitäres Völkerrecht*, Vol. 8, No. 1, 1995, pp. 1–14; Miriam R. Lowi, *Water and Power: The Politics of a Scarce Resource in the Jordan River Basin*, Cambridge University Press, Cambridge, 1995; Christian Chesnot, *La bataille de l'eau au Proche-Orient*, L'Harmattan, Paris, 1993.
- 15 Tony Allan, ‘Avoiding war over natural resources’, ICRC Forum, *Water and War*, 1998, p. 17.
- 16 For example, the 1967 Six Day War has been studied as a conflict over the control of the access to water resources situated in the West Bank and the Golan Heights. The invasion of Lebanon in 1982 has also been analysed as a conflict over the control of the Litani river. See John K. Cooley, ‘The war over water’, in *Foreign Policy*, No. 54, 1984, pp. 3–26. See also J. R. Starr, above note 1, p. 19.
- 17 See Thomas F. Homer-Dixon, ‘On the threshold: environmental changes as causes of acute conflict’, in *International Security*, Vol. 16, No. 2, 1991, pp. 76–116; Thomas F. Homer-Dixon, ‘Environmental scarcities and violent conflict: evidence from cases’, in *International Security*, Vol. 19, No. 1, 1994, pp. 5–40.

war', was nuanced or even rejected.¹⁸ At the same time, the co-operative side of shared water resources has been increasingly recognized.¹⁹

Rejecting the analysis on 'water wars' does not mean denying that water is a cause of armed conflict. In this regard, one should mention the studies of Homer-Dixon, which have established a methodological framework followed by other scholars.²⁰ The scarcity and inequitable allocation of water resources, along with the growth of population, are counted among the causes of armed conflict. Moreover, the studies of the International Peace Research Institute of Oslo have underlined that deforestation and degradation of soil and water, along with authoritarian regimes, increase the risks of conflicts and hostilities.²¹ Political and socio-economic aspects interact with the degradation of the environment in complex ways. Those interactions can have an impact on poverty and social insecurity and become triggers for armed conflict. Furthermore, other elements studied as causes for violence are related to national policies on the management of water. Privatization of water services and the development of hydroelectric installations have been considered as possible sources of violence within states.²² In this context, the violence triggered by the privatization of water services in Cochabamba during the spring of 2000 has been cited as a new kind of 'water war'.²³

There is one further dimension of the relation between water and international peace and security. Water can be read both as a factor triggering armed conflicts and also as a weapon and an objective of armed conflict. The research conducted by Gleick found that the use of water as a weapon of war and military target is common during hostilities. With his research group, Gleick has developed a chronology of conflicts enumerating over 200 examples in which water has been used as a means of warfare or as a military target.²⁴ Moreover, many environmental assessment reports conducted by UNEP have highlighted the impact of armed conflict on water resources and water facilities.²⁵ The relationship between water,

18 Thomas F. Homer-Dixon, 'The myth of global water wars', ICRC Forum, *Water and War*, 1998, pp. 10–15.

19 See Christina Leeb, 'Changing paradigms: the impact of water securitization on international water law', in *Il Politico*, Vol. 221, No. 2, 2009, pp. 113–128.

20 The researchers of the Swiss Federal Institute of Technology (ETH) and of the Swiss Peace Foundation established the Environment and Conflicts Project, which analyses the root causes of armed conflict, including water shortages. See Stephan Libiszewski, *Water Disputes in the Jordan Basin Region and their Role in the Resolution of the Arab–Israeli Conflict*, Occasional Paper No. 13, 1995, available at: http://www.mideastweb.org/Mew_water95.pdf (last visited 7 September 2010).

21 Hans Petter Wollebaek Toset, Nils Petter Gleditsch, and Håvard Hegre, 'Shared rivers and interstate conflict', in *Political Geography*, Vol. 19, No. 8, 2000, pp. 971–996.

22 Ken Conca, *Governing Water: Contentious Transnational Politics and Global Institution Building*, MIT Press, Cambridge, MA, 2006, pp. 167–255.

23 Sandra L. Postel and Aaron T. Wolf, 'Dehydrating conflict', in *Foreign Policy*, No. 126, September–October 2001, pp. 60–67.

24 Chronology of the *Pacific Institute for Studies in Development, Environment, and Security*, available at: <http://www.worldwater.org/conflict/list/> (last visited 7 September 2010).

25 See, *inter alia*, UNEP and United Nations Centre for Human Settlements (Habitat), *Balkan Task Force, The Kosovo Conflict: Consequences for the Environment & Human Settlements*, 1999, pp. 59–62, available at: <http://www.grid.unep.ch/btf/final/finalreport.pdf> (last visited 7 September 2010); UNEP, *Desk Study on the Environment in Iraq*, 2003, pp. 28–33, available at: <http://postconflict.unep.ch/publications/>

international peace, and security therefore has two main facets. One of them relates to the emerging role of water in the maintenance of international peace and security, while the other deals with the impact of armed conflicts on water.

The changing contours of international peace and security

The maintenance of international peace and security has been mainly understood as the protection of a state's territory and sovereignty. Despite the fact that the risks of conflict over water have been recognized since the 1980s,²⁶ and are known to be accelerated by climate change, water still has a modest role in the maintenance of international peace and security. This can be explained by the fact that the latter is mainly understood as connoting the protection of the state's territory from military attacks by other states. Nevertheless, while focusing originally on military use of force, the maintenance of international peace and security has been moulded into other contours, which include economic,²⁷ social, and environmental aspects, as well as military ones.²⁸

Since the end of the 1990s, the Security Council has paid attention to the management and protection of natural resources within the framework of conflict prevention and post-conflict peace-building.²⁹ Other UN institutions have also underlined the role of natural resources as a means for strengthening peace and security. Since competition over water use and water shortages may be among the causes of conflict, ensuring access to and protection of water may contribute to peace and security. Water is one of the factors triggering or aggravating conflicts and tensions, but it is also a path for dialogue and building confidence between

Iraq_DS.pdf (last visited 7 September 2010); UNEP, *Desk Study on the Environment in the Occupied Palestinian Territories*, 2003, pp. 20–41, available at: <http://postconflict.unep.ch/publications/INF-31-WebOPT.pdf> (last visited 7 September 2010); UNEP, *Afghanistan: Post-Conflict Environmental Assessment*, 2003, pp. 49–62, available at: <http://postconflict.unep.ch/publications/afghanistanpcajanuary2003.pdf> (last visited 7 September 2010); UNEP, *Lebanon: Post-Conflict Environmental Assessment*, 2006, pp. 110–129, available at: http://postconflict.unep.ch/publications/UNEP_Lebanon.pdf (last visited 7 September 2010).

26 See A. H. Westing, above note 13, p. 6f.; J. K. Cooley, above note 16, p. 5.

27 On the economic aspects, see Laurence Boisson de Chazournes, 'Collective security and the economic interventionism of the UN: the need for a coherent and integrated approach', in *Journal of International Economic Law*, Vol. 10, No. 1, 2007, pp. 51–86.

28 The concepts of 'environmental security' and 'human security' support the inclusion of issues related to the protection of natural resources and vital human needs in the context of international peace and security. See Karen Hulme, 'Environmental security: implications for international law', in *Yearbook of International Environmental Law*, Vol. 19, 2008, pp. 3–25; Barbara von Tigerstrom, 'International law and the concept of human security', in Ustinia Dolgopol and Judith Gardam (eds), *The Challenges of Conflict: International Law Responds*, Martinus Nijhoff, Leiden/Boston, 2006, pp. 599–616; Hans Günter Brauch, *Environment and Human Security: Towards Freedom from Hazard Impacts*, InterSecTions Paper No. 2, United Nations University, Institute for Environment and Human Security (UNU-EHS) Publication, Bonn, 2005, available at: <http://www.ehs.unu.edu/file/get/4031> (last visited 7 September 2010).

29 Jo Stigen and Ole Kristian Fauchald, 'Environmental security', in Cecilia M. Bailliet (ed.), *Security: A Multidisciplinary Normative Approach*, International Humanitarian Law series, Martinus Nijhoff Publishers, Vol. 26, 2009, pp. 324–331.

states. As the article will point out later, joint commissions on transboundary water resources have been resilient during armed conflicts and they have sometimes been the only available fora for discussion between riparian states involved in war.

The role of water in international peace and security

During the 1970s and 1980s, the linkage between natural resources and peace started to find some expressions in international documents. It was in the Declaration of the United Nations Conference on the Human Environment held at Stockholm in 1972 (Stockholm Declaration) that the connection between natural resources, social development, and peace was first recognized. The Stockholm Declaration opened the door to the perspective that environmental protection of natural resources is a fundamental objective of states 'together with, and in harmony with, the established and the fundamental goals of peace and of worldwide economic and social development'.³⁰ Three years later, the Helsinki Final Act of 1975, adopted at the Conference on Security and Cooperation in Europe, constituted another step in affirming the relationship between natural resources and international peace and security. The Act underscores the importance of environmental co-operation for the maintenance of peaceful relations between states.³¹

During the 1980s, the analysis of the linkages between natural resources, peace, and security took a larger perspective with the inclusion of socio-economic dimensions. As an example, one may cite the Independent Commission on Disarmament and Security, chaired by Olof Palme, which included environmental and socio-economic factors in its analysis of the notion of security.³²

The report 'Our Common Future' of the World Commission on Environment and Development of 1987 (also known as the Brundtland Report) deals with the theme of peace and security within the context of the need for environmental protection sustainable development and of increased scarcity of water resources.³³ Some instruments adopted during the 1990s have followed its approach on the causes of armed conflict. The relation between environment, development, and peace is recognized in the Rio Declaration on the Environment and Development of 1992. Its Principle 25 affirms that '[p]eace, development and

30 'Declaration of the United Nations Conference on the Human Environment', Stockholm, 16 June 1972, preamble para. 6, in *International Legal Materials (ILM)*, Vol. 11, 1972, p. 1416, available at: <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503> (last visited 7 September 2010).

31 'The Final Act of the Conference on Security and Cooperation in Europe', Helsinki, 1 August 1975, in *ILM*, Vol. 14, p. 1292 (Helsinki Declaration), available at: <http://www1.umn.edu/humanrts/osce/basics/finact75.htm> (last visited 7 September 2010).

32 Peter H. Liotta, 'Military and environmental security: revisiting the concepts in the Euro-Mediterranean', in Hans G. Brauch, Peter H. Liotta, Antonio Marquina, Paul F. Rogers, and Mohammad El-Sayed Selim (eds), *Security and Environment in the Mediterranean: Conceptualising Security and Environmental Conflicts*, Berlin, Springer, 2003, p. 303.

33 *Report of the World Commission on Environment and Development: Our Common Future*, transmitted to the General Assembly as Annex to UN Doc. A/42/427, 4 August 1987, paras. 12–13 and 15, available at: <http://www.un-documents.net/wced-ocf.htm> (last visited 7 September 2010).

environmental protection are interdependent and indivisible'.³⁴ Moreover, in the Agenda for Peace of 1992 the environment and sustainable development are mentioned as means for the maintenance of peace.³⁵

Between the end of the 1990s and the 2000s, the issue of access to water took a specific place in international instruments.³⁶ Water is considered as a natural resource with a particular statute. The Ministerial Declaration on Water Security in the 21st Century adopted at the Second World Water Forum in The Hague in 2000 addressed the linkage between water and security. This Declaration affirms that 'water security' goes together with political stability.³⁷ The protection of water resources and their ecosystems, as well as the access to safe and sufficient water, are included in the concept of water security promoted by this text.

The definition of water security given by the Ministerial Declaration of 2000 is broad; it includes not only environmental but also human aspects, such as the access to water, indicating that water security should be read through the concept of human security.³⁸ According to the approach promoted by this concept, individual human beings and not just states are entitled to benefit from peace and security.³⁹ Meeting vital human needs such as the protection of water supplies contributes to the decrease of conflicts and to the return to peace.

The role that natural resources play in the context of international peace and security is indicated in the Report of the High-Level Panel created by the former UN Secretary-General, Kofi Annan, which was released in 2004. The objective of the Panel was 'to assess current threats to international peace and security' and to recommend measures 'for strengthening the United Nations so that it can provide collective security for all in the twenty-first century'.⁴⁰ The

34 'Declaration of the United Nations Conference on the Environment and Development', Rio de Janeiro, 14 June 1992, in *ILM*, Vol. 31, 1992, p. 876 (Rio Declaration), available at: <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163> (last visited 7 September 2010).

35 Report of the Secretary-General pursuant to the statement adopted by the Summit Meeting of the Security Council on 31 January 1992, *An Agenda for Peace: Preventive Diplomacy, Peacemaking and Peace-keeping*, UN Doc. A/47/277, para. 5.

36 See *infra* on the contribution of human rights law on this theme.

37 Ministerial Declaration of The Hague on Water Security in the 21st Century, 22 March 2000, <http://www.gdrc.org/uem/water/hague-declaration.html> (last visited 7 September 2010).

38 For a definition of human security see UNDP, Human Development Report, *New Dimensions of Human Security*, 1994, pp. 22–23, available at: http://hdr.undp.org/en/media/hdr_1994_en_chap2.pdf (last visited 7 September 2010). On the role of water in the concept of human security see Commission on Human Security, *Human Security Now*, 2003, p. 15, available at: <http://www.humansecurity-chs.org/finalreport/English/FinalReport.pdf> (last visited 7 September 2010).

39 The approach that the security of people contributes to peace has been taken into account in the 2006 Report on the Prevention of Armed Conflict, which affirms that: 'Bringing communities together to tackle humanitarian concerns such as food insecurity, water supplies, health and the needs of children can also serve a conflict-prevention purpose by opening avenues for dialogue and mutual cooperation'. Report of the Secretary-General, *Progress Report on the Prevention of Armed Conflict*, A/60/891, 18 July 2006, para. 35. See also Report of the Secretary-General on the Implementation of the Security Council Resolution 1625 (2005) on Conflict Prevention, particularly in Africa, S/2008/18, 14 January 2008, para. 29.

40 Report of the High-Level Panel on Threats, Challenges and Change, *A More Secure World: Our Shared Responsibility*, annexed to General Assembly resolution A/59/565/, 2 December 2004, para. 3, available

Report identifies six clusters of ‘threats’ including poverty, infectious disease, and environmental degradation. This wide understanding of ‘threats’ to security was criticized by a number of states, who perceived it as a means for expanding the powers of the Security Council.⁴¹

The approach taken by the High-Level Panel may be considered as an attempt to ‘securitize’ the issue of the protection of natural resources. In fact it closely associates natural resources with security concerns of states. Natural resources and environmental degradation are topics that are very different from other issues dealt with by the High-Level Panel, such as terrorism and the use of nuclear, radiological, chemical, and biological weapons. Since natural resources can either be a factor fuelling conflict or play the role of promoting co-operation between states, this ‘securitization process of natural resources’⁴² may run the risk of underlining only one dimension of the role played by those resources.⁴³

Another way to look at the function of natural resources in promoting peace and security is to analyse the practice of the UN Security Council. While the practice on water of the Security Council is modest or almost non-existent, since the end of the 1990s, it has increasingly been paying attention to the protection of natural resources as a tool for preventing conflicts and building peace in post-conflict countries.⁴⁴

Water and the Security Council

In conformity with its mandate conferred by the UN Charter, the Security Council has the ‘primary responsibility for the maintenance of international peace and security’.⁴⁵ Over the years, it has dealt with water issues on very few occasions. During the 1950s, it adopted two resolutions concerning some development

at: http://www2.ohchr.org/english/bodies/hrcouncil/docs/gaA.59.565_En.pdf (last visited 7 September 2010).

41 S. Neil MacFarlane and Yuen Foong Khong, *Human Security and the UN: A Critical History*, Indiana University Press, Bloomington and Indianapolis, 2006, p. 10.

42 D. Philips *et al.*, above note 4, p. 20.

43 It should be noted that calls have been made to use carefully the concepts of ‘threats’ and ‘security’. Both concepts are particularly important when one considers the powers of the Security Council under Chapter VII of the UN Charter. See Marco Sassòli, ‘The concept of security in international law relating to armed conflicts’, in C. M. Bailliet (ed.), above note 29, pp. 7–17. Some authors have analysed in which situations the threats to the environment can be characterized as a ‘threat to peace, breach of the peace or act of aggression’ according to Article 39 of the UN Charter. See Alexandra Knight, ‘Global environmental threats: can the security council protect our Earth?’, in *New York University Law Review*, Vol. 80, 2005, pp. 1549–1585.

44 See, *inter alia*, Security Council resolution 1625, adopting the ‘declaration on strengthening the effectiveness of the Security Council’s role in conflict prevention, particularly in Africa’, stressing the need to adopt a broad strategy of conflict prevention that includes the ‘root causes of armed conflict and political and social crisis’ and the promotion of ‘sustainable development’, UN Security Council resolution 1625, 14 September 2005, S/RES/1625. In this regard see J. Stigen and O. K. Fauchald, above note 29, pp. 324–331.

45 Article 24 of the UN Charter.

projects on the waters of the Jordan river in the demilitarized zone established under the General Armistice Agreement between Israel and Syria of 1949.⁴⁶ The Security Council requested the suspension of works while establishing criteria for determining what kind of projects could be realized in the demilitarized zone.⁴⁷

After the Six Day War and the occupation of the Golan Heights, West Bank, and Gaza Strip, the Security Council once again dealt with the situation of water resources in the Middle East. In 1979, it established a Commission, composed of three Security Council members appointed by the President of the Council, whose aim was to analyse the situation relative to settlements in the Arab territories occupied since 1967.⁴⁸ In 1980, the Security Council included water issues in the mandate of the Commission. It indicated the need of the Commission ‘to consider measures for the impartial protection of private and public land and property, and water resources’ in the Occupied Palestinian Territories and other Arab territories⁴⁹ and it charged the Commission with investigating the ‘serious depletion of natural resources, particularly the water resources, with a view to ensuring the protection of those important natural resources of the territories under occupation’.⁵⁰ The Commission released its report in the same year, indicating the use of water by Israel as ‘an economic and even political weapon to further its policy of settlements’.⁵¹ Although these concerns were expressed in the report, no measure dealing with water was taken.

While the Security Council has rarely dealt with water issues, there has been a more frequent focus on the role of other natural resources such as diamonds and timber in fuelling armed conflicts in some countries of Africa, such as the Democratic Republic of Congo (DRC), Liberia, and Côte d’Ivoire.⁵² Additionally, the Security Council has noted in some of its resolutions the need to address the root causes of armed conflict in a comprehensive manner, and has highlighted

46 General Armistice Agreement between Israel and Syria, 20 July 1949, in *United Nations Treaty Series (UNTS)*, Vol. 42, 1949, p. 327.

47 In its resolution of 18 May 1951, the Security Council decided that no project ‘involving the transfer of persons across international frontiers, across armistice lines or within the demilitarized zone’ should be realized ‘without prior decision of the Chairman of the Mixed Armistice Commission’. It should be noted that, in making this request, the Security Council did not act under Chapter VII of the UN Charter. Security Council resolution 93, 18 May 1951, S/2157. See also Jean-Victor Louis, ‘Les eaux du Jourdain’, in *Annuaire Français de Droit International*, Vol. 11, 1965, p. 837.

48 Security Council resolution 446 (1979), 22 March 1979, S/RES/446 (1979), para. 4.

49 Security Council resolution 465 (1980), 1 March 1980, S/RES/465 (1980), preamble.

50 *Ibid.*, para. 8.

51 *Report of the Security Council Commission established under Resolution 446 (1979)*, 25 November 1980, UN Doc. S/14268, para. 239, available at: <http://unispal.un.org/UNISPAL.NSF/0/6956B6BC3E956094852563B7005AC2BD> (last visited 7 September 2010).

52 On the conflict in the Democratic Republic of Congo (DRC) see, for example, Security Council resolutions 1565 (2004), 1 October 2004, S/RES/1565 (2004), para. 22; and 1533 (2004), 12 March 2004, S/RES/1533, para. 6. On the conflict in Liberia see, for example, Security Council resolutions 1509 (2003), 19 September 2003, S/RES/1509, para. 3(r); and 1854 (2008), 19 December 2008, S/RES/1854, preamble. On the conflict in Côte d’Ivoire see, for example, Security Council resolution 1643 (2005), 15 December 2005, S/RES/1643, para. 9(b).

sustainable development as an essential factor of peace-building.⁵³ In this regard, the mandate of the Peace-building Commission established in 2005 states that one of its purposes is to 'lay the foundation for sustainable development'⁵⁴ and the Security Council 'acknowledges the crucial role that the Peace-building Commission ... can play, in post-conflict situations, in assisting governments, upon their request, in ensuring that natural resources become an engine for sustainable development'.⁵⁵

Thus it can be seen that there has so far been little focus on water and natural resources in the resolutions of the Security Council. It may be argued that the protection of water belongs to the mandate of the General Assembly and the Economic and Social Council more than to that of the Security Council.⁵⁶ The former bodies present a more 'democratic' character and they may be more adapted to dealing with environmental and socio-economic issues.⁵⁷ However, as the main body for the maintenance of international peace and security, the Security Council, by promoting sustainable development as a conflict prevention strategy and as a tool for peace-making, could play a significant role in addressing the root causes of armed conflict in a more comprehensive way.

The emerging recognition of the function of natural resources in the maintenance of international peace and security may contribute to emphasizing that water resources must be better protected in time of armed conflict. The post-conflict environmental assessments made by UNEP have underscored that reconstruction efforts should include strategies for ensuring access to water and for the environmental rehabilitation of water resources. Those elements are needed for the successful return to peace.⁵⁸

The linkages between the maintenance of international peace and security and the protection of water during armed conflict

An assessment of the relation between water, international peace, and security includes looking at the impacts of armed conflict on water. Armed conflict affects

53 See Security Council resolutions 1170 (1998), 28 May 1998, S/RES/1170, para. 1; 1265 (1999), 17 September 1999, S/RES/1265, preamble; 1318 (2000), 7 September 2000, S/RES/1318, preamble; 1366 (2001), 30 August 2001, S/RES/1366, para. 21; 1674 (2006), 28 April 2006, S/RES/1674, para. 1.

54 See Security Council resolution 1645, 20 December 2005, S/RES/1645, para. 2(b); and General Assembly resolution 60/180, 30 December 2005, A/RES/60/180, para. 2(b). See also General Assembly resolution 60/1, 24 October 2005, A/RES/60/1, paras. 97–105.

55 Statement made by the President of the Security Council, 25 June 2007, UN Doc. S/PRST/2007/22.

56 According to the UN Charter, the General Assembly 'may discuss any questions or any matters within the scope of the present Charter', and the Economic and Social Council 'may make or initiate studies and reports with respect to international economic, social, cultural, educational, health and related matters and may make recommendations with respect to any such matters to the General Assembly, to the Members of the United Nations, and to the specialized agencies concerned'. Articles 10 and 62 of the UN Charter.

57 See Pierre-Marie Dupuy, 'Sécurité collective et organisation de la paix', in *Revue Générale de Droit International Public*, Vol. 97, 1993, pp. 623–624.

58 See Carl Bruch, David Jensen, Mikiyasu Nakayama, Jon Unruh, Rebecca Gruby, and Ross Wolfarth, 'Post-conflict Peace Building and Natural Resources', in *Yearbook of International Environmental Law*, Vol. 19, 2008, pp. 70–73 and 80–82.

water in several ways: destruction and damage to water facilities, attacks against power plants providing water supplies, and the collapse of water treatment and sewage systems are all aspects. The limitations on access to water as well as the over-utilization and pollution of water resources in the Occupied Palestinian Territories illustrates the many dimensions of the consequences of the conduct of hostilities and of the regime of occupation on water.⁵⁹ Meanwhile, armed conflict may affect the environment and ecosystem of water resources. This was the case, for example, in the conflict in Kosovo in 1999, when the attacks against industrial facilities situated along the Danube river caused the release of polluting substances in the river. The bombing of Pančevo and Novi Sad oil refineries spread the fear of widespread ecological damage to water resources.⁶⁰

The connection between water and international peace and security can be analysed through the norms of international humanitarian law dealing with the protection of water. Those norms play a significant role in ensuring human security, with the protection of the basic needs of the population lying at the centre of that concept.⁶¹ Protecting human security implies meeting basic water needs of the population and thus contributing to the peace process. Some provisions of international humanitarian law deal with the protection of access to water and environmental protection of water resources.

The protection of water in the conduct of hostilities

The first norms of modern international humanitarian law dealing with the protection of access to water pertain to the protection of specific categories of individuals such as prisoners of war and internees. Those norms were provided for by the Third and Fourth Geneva Conventions of 1949 respectively.⁶² Yet, it was not until the adoption of the Additional Protocols of 1977 to the 1949 Geneva Conventions that the protection of access to water was included in the regime of the limitations imposed on military operations during international and non-international armed conflicts.

Water installations and water resources are generally understood as civilian objects and as such they are immune from attacks.⁶³ In addition, international

59 See Amnesty International, *Troubled Waters: Palestinians Denied Fair Access to Water: Israel-Occupied Palestinian Territories*, October 2009, available at: <http://www.amnesty.org/en/library/asset/MDE15/027/2009/en/e9892ce4-7fba-469b-96b9-c1e1084c620c/mde150272009en.pdf> (last visited 7 September 2010); UNEP, *Desk Study on the Environment in the Occupied Palestinian Territories*, above note 25.

60 UNEP and United Nations Centre for Human Settlements (Habitat), above note 25, pp. 59–62.

61 For a definition see UNDP, above note 38, p. 23.

62 Articles 20(1), 26(3), 29(3), and 46(3) of the Geneva Convention (III) relative to the Treatment of Prisoners of War of 12 August 1949 (hereafter Third Geneva Convention); Articles 85(3), 89(3), and 127(2) of the Geneva Convention (IV) relative to the Protection of Civilian Persons in Time of War of 12 August 1949 (hereafter Fourth Geneva Convention).

63 According to Article 52(1) of Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) of 8 June 1977 (hereafter Additional Protocol I): ‘Civilian objects are all objects which are not military objectives as defined in paragraph 2’. See also Yoram Dinstein, *The Conduct of Hostilities Under the Law of*

humanitarian law grants special protection to water essential to the survival of the civilian population. Both Article 54(2) of Additional Protocol I and Article 14 of Additional Protocol II,⁶⁴ provide for the protection of objects indispensable to the survival of the civilian population, such as ‘drinking water installations and supplies and irrigation works’.⁶⁵

Neither Article 54(2) of Additional Protocol I nor Article 14 of Additional Protocol II contains an exhaustive list of indispensable objects.⁶⁶ In this respect, one may raise the issue as to whether or not the ‘objects indispensable to the survival of the civilian population’ include water resources such as rivers, lakes, or groundwaters. When water is scarce and climate harsh, protecting water resources may be indispensable to ensuring the survival of the civilian population. Another issue that has also been raised is whether or not ‘drinking water installations’ encompass ‘electricity-generating plants that supply the power necessary for the purification and pumping of drinking water’.⁶⁷ In so far as the civilian population is concerned, it can make little difference whether the attack is against a drinking water installation or against infrastructure that is indispensable to the functioning of a utility providing essential water services. In both cases, the impact of the military operation can be the same, implying the denial of water supplies indispensable to the survival of the civilian population.⁶⁸

Although both Additional Protocols provide for the ban on attacking objects indispensable to the survival of the civilian population, this prohibition is defined slightly differently for international and non-international armed conflicts. In the latter case, Article 14 of Additional Protocol II (which does not admit any exception to the prohibition of attacks against water supplies) states an absolute proscription of attacks with the purpose to starve civilians. In the context of an international armed conflict, by contrast, Article 54 of Additional Protocol I provides for some exceptions to the prohibition.⁶⁹ The criteria for derogation, however, are restrictive.⁷⁰ Article 54(3)(b) of Additional Protocol I states that ‘in no event’ shall attacks against targets such as drinking water installations be

International Armed Conflict, 2nd edition, Cambridge University Press, Cambridge, 2010, paras. 303–305.

64 Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II) of 8 June 1977 (hereafter Additional Protocol II).

65 Additional Protocol I, Art. 54(2), and Additional Protocol II, Art. 14. On the content of those provisions in international humanitarian law, see T. Boutruche, above note 7, pp. 887–915. Moreover, attacks against civilian objects, and in particular objects that are indispensable to the survival of the civilian population, are classified as war crimes. See Article 8(2)(b)(ii) and (xxv) of the Rome Statute of the International Criminal Court (ICC) of 17 July 1998, A/CONF.138/9 (hereafter Rome Statute).

66 Yves Sandoz, Christophe Swinarski, and Bruno Zimmermann (eds), *Commentary on the Additional Protocols of 8 June 1987 to the Geneva Conventions of 12 August 1949* (hereafter *Commentary AP*), ICRC/Martinus Nijhoff Publishers, Geneva, 1977, paras. 2103 and 4802.

67 Henry Shue and David Wippman, ‘Limiting attacks on dual-use facilities performing indispensable civilian functions’, in *Cornell International Law Journal*, Vol. 35, 2002, p. 573.

68 In this respect, see the prudent position of Y. Dinstein, above note 63, para. 535.

69 See Additional Protocol I, Art. 54(3) and (5).

70 *Commentary AP*, above note 66, paras. 2109–2112 and 2116–2123.

undertaken when they may be ‘expected to leave the civilian population with such inadequate food or water as to cause its starvation or force its movement’. At this point, prosecutions of attacks against essential means of survival, such as drinking water supplies, before international judicial or quasi-judicial bodies are still rare.⁷¹

Access to water also can be affected by attacks against works and installations containing dangerous forces, such as dams and dykes. Attacks against dams and dykes used for providing water supplies indispensable to the survival of the civilian population and made for the specific purpose of denying water to the civilian population are against both Articles 54(2) and 56(1) of Additional Protocol I. Both Additional Protocols provide for the prohibition of attacking dams and dykes, ‘even where these objects are military objectives’.⁷² As in the case of the protection of objects indispensable to the survival of the civilian population, there are some differences in the regime of protection accorded to dams and dykes during international and non-international armed conflicts. While Article 15 of Additional Protocol II does not admit any exception, Article 56(2) of Additional Protocol I establishes specific requirements under which the special protection conferred to dams and dykes would cease.⁷³ Yet, even in cases where protection ceases, the civilian population is entitled to the protection accorded ‘by international law, including the protection of the precautionary measures provided for in Article 57 [of Additional Protocol I]’.⁷⁴

Dams may often provide the energy indispensable to bring water supplies or even provide water supplies. However, it can be difficult to prove a violation of the prohibition against attacking installations containing dangerous forces. An example is provided by the *Armed Activities on the Territory of the Congo* case brought by the DRC against Uganda before the International Court of Justice (ICJ). Although the DRC raised the violation of Article 56 of Additional Protocol I in its application to the ICJ in 1999,⁷⁵ it then decided not to develop this argument during the written and oral phases of the procedure before the Court.⁷⁶ This

71 An example is the award of the Eritrea–Ethiopia Claims Commission, established under the auspices of the Permanent Court of Arbitration (PCA), analysing an Ethiopian military operation against a water reservoir in Eritrea. Eritrea Ethiopia Claims Commission, *Western Front, Aerial Bombardment and Related Claims: Eritrea’s Claims 1, 3, 5, 9–13, 14, 21, 25 & 26*, Partial Award, 19 December 2005, paras. 98–105, available at: <http://www.pca-cpa.org/upload/files/FINAL%20ER%20FRONT%20CLAIMS.pdf> (last visited 7 September 2010).

72 Additional Protocol I, Art. 56(1) and Additional Protocol II, Art. 15. The regime of protection conferred to the installations containing dangerous forces is completed by Article 85(3)(c) of Additional Protocol I, which considers attacks against such objects as grave breaches.

73 The protection against attack will cease only if a dam or a dyke ‘is used for other than its normal function and in regular, significant and direct support of military operations and if such attack is the only feasible way to terminate such support’ (Additional Protocol I, Art. 56(2)(a)).

74 Additional Protocol I, Art. 56(3).

75 International Court of Justice (ICJ), *Armed Activities on the Territory of the Congo (Democratic Republic of Congo v. Uganda)*, Application Instituting Proceedings, filed in the Registry of the Court on 23 June 1999, pp. 15 and 17, available at: <http://www.icj-cij.org/docket/files/116/7151.pdf> (last visited 7 September 2010).

76 In its memorial, the DRC affirms that the Inga dam generates electricity for the town of Kinshasa and that taking possession of the Inga dam and causing power cuts had ‘catastrophic’ impacts on both the town and the surrounding area. Article 56 of Additional Protocol I was not, however, mentioned in the

approach shows that taking possession of the dam was not considered sufficient for proving a violation of Article 56 of Additional Protocol I. According to this article, an attack against a dam is prohibited 'if such [an] attack may cause the release of dangerous forces and consequent severe losses among the civilian population'.⁷⁷ Both elements are required to prove a violation of the article. The same difficulties in applying the prohibition of attacks against works containing dangerous forces could arise with regard to Article 15 of Additional Protocol II.

There are other rules ensuring protection of access to water during armed conflict, which deal with the protection of the environment. The safe character of water supplies is indispensable to preventing threats to the health of the civilian population and the spread of waterborne disease. The release of polluting substances caused by the attacks to industrial facilities may contaminate sources of water, especially groundwater resources that are particularly vulnerable to the risks of pollution.⁷⁸

Rivers, lakes, and groundwater resources are generally considered as civilian objects, and as such they are entitled to all of the protection afforded to 'civilian objects'.⁷⁹ Additional Protocol I, providing in Articles 35(3) and 55 the prohibition of causing 'widespread, long-term and severe damage', establishes a very high threshold of damage. The adjectives 'widespread, long-term and severe' used in Additional Protocol I mean that it is a triple, cumulative standard that needs to be fulfilled.⁸⁰ The conditions for the application of Articles 35(3) and 55 of Additional Protocol I are thus extremely stringent. For instance, the notion of 'long-term' employed by Additional Protocol I was defined as lasting for a period of years rather than months.⁸¹ The report adopted by the Committee established to review the NATO military operations in the Federal Republic of Yugoslavia (FRY) in 1999 illustrated well the difficulties regarding the application of Articles 35(3) and 55 of Additional Protocol I in respect to the pollution of water resources.⁸² In the view of the Committee, the application of these Articles could be only invoked in situations of extreme pollution of water resources.

Military operations on transboundary water resources may affect the environment of other states. Those attacks violate the protection granted to civilian

memorial submitted by the DRC. ICJ, Memorial, July 2000, p. 65, available at: <http://www.icj-cij.org/docket/files/116/8321.pdf> (last visited 7 September 2010).

77 Additional Protocol I, Art. 56(1), first sentence.

78 In this regard, see International Law Commission (ILC), *Second Report on Shared Natural Resources*, by Mr. Chusei Yamada, *Special Rapporteur*, 9 March 2004, A/CN.4/539, para. 25.

79 See Karen Hulme, *War Torn Environment: Interpreting the Legal Threshold*, Martinus Nijhoff Publishers, 2004, p. 300.

80 The same adjectives are also used in Article 8(2)(b)(iv) of the Rome Statute.

81 *Commentary AP*, above note 66, para. 1452.

82 See *Final Report to the Prosecutor by the Committee established to Review the NATO Bombing Campaign against the Federal Republic of Yugoslavia*, June 2000, paras. 15 and 17, available at: http://www.icty.org/x/file/About/OTP/otp_report_nato_bombing_en.pdf (last visited 7 September 2010). For a critical appraisal of the report, see Paolo Benvenuti, 'The ICTY prosecutor and the review of the NATO bombing campaign against the Federal Republic of Yugoslavia', in *European Journal of International Law*, Vol. 12, No. 3, 2001, pp. 503–529.

objects by international humanitarian law and they are also in violation of a general principle of international law providing that states have ‘to ensure that activities within their jurisdiction and control respect the environment of other States’.⁸³ Moreover, the impacts on the environment have to be taken into account when states are ‘assessing what is necessary and proportionate in the pursuit of legitimate military objectives’.⁸⁴ Thus, general principles of international humanitarian law may play an important role in protecting water resources against environmental damage caused in both international and non-international armed conflicts.

Many of the impacts on water are caused not by attacks against the resource itself but by military operations against industrial facilities and the consequent release of polluting substances. For example, during the conflict in Kosovo, the NATO bombing of industrial facilities caused a significant contamination of water resources, particularly in the Danube river, its tributaries, and groundwater resources. The report adopted by the Committee established to review the NATO military operations against the FRY took into account the principle of proportionality and it considered that ‘military objectives should not be targeted if the attack is likely to cause collateral environmental damage which would be excessive in relation to the direct military advantage which the attack is expected to produce’.⁸⁵ This approach is significant because it opens an alternative protection to the environment to that provided by Articles 35(3) and 55 of Additional Protocol I. Although the Committee underscored the importance of the principle of proportionality, it concluded that it was not necessary that the Office of the Prosecutor of the International Criminal Tribunal for the former Yugoslavia (ICTY) open an investigation because there was a lack of sufficient information to evaluate the environmental damage.⁸⁶ However, one of the responsibilities of a judicial body such as the Committee is to gather the pertinent information in order to evaluate facts such as the damage caused to water resources and to determine the legal consequences of those facts.

The protection of water under the regime of occupation

The 1907 Hague Regulations⁸⁷ and the Fourth Geneva Convention, containing norms on the protection of property and on the treatment of civilians, are the two principal sources of law regulating the use of water resources and the access to water in occupied territories.⁸⁸ The contribution of the rules on property to the uses

83 ICJ, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, ICJ Reports 1996, para. 29.

84 *Ibid.*, para. 30.

85 *Final Report to the Prosecutor*, above note 82, para. 18.

86 *Ibid.*, paras. 22 and 24.

87 Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land of 18 October 1907 (hereafter 1907 Hague Regulations).

88 See Antonio Cassese, ‘Powers and duties of an occupant in relation to land and natural resources’, in Emma Playfair (ed.), *International Law and the Administration of Occupied Territories: Two Decades of Israeli Occupation of the West Bank and Gaza Strip*, Oxford, Clarendon Press, 1992, pp. 419–442;

of natural resources has been illustrated by the judgement of the ICJ in the case *Armed Activities on the Territory of Congo*. The DRC claimed that Ugandan forces systematically looted and exploited the assets and natural resources in the occupied territory in violation of the norms of international humanitarian law. The Court, relying on United Nations reports and other international sources, considered that the Ugandan troops involved in the looting and exploitation of natural resources in the territory of the DRC 'acted in violation of the *jus in bello*, which prohibits the commission of such acts by a foreign army in the territory where it is present'.⁸⁹ The Court reached this conclusion on the basis of the prohibition of pillage contained in both the 1907 Hague Regulations and the Fourth Geneva Convention.⁹⁰

The 1907 Hague Regulations contain a nuanced legal framework on property, distinguishing between private and public property as well as between movable and immovable property. Both of these distinctions are important factor in the assessment of the extent to which the occupying power can control water resources. Legal scholars have taken different approaches on the qualification of water under the law of belligerent occupation: whereas some treat the exploitation of water resources as a private property right enjoyed by the owner of the land, others see water as a public resource.⁹¹ Depending on the domestic legislation, water can be either private or public property. Water wells or pumps privately owned must be respected and cannot be confiscated.⁹² Moreover, water installations owned by municipalities have to be treated as private property.⁹³ Regarding the qualification as movable or immovable property, water may be included in both kinds of property. While bottles of water are movable property, water in rivers, lakes, or groundwater resources, can be qualified as immovable property.⁹⁴

Although water sources constitute assets that can be either private or public depending on domestic legislation, transboundary rivers, lakes, and aquifers are a unique type of resource and they are not usually privately owned.⁹⁵ As noted above, the 1907 Hague Regulations make a distinction between state-owned movable and immovable property. Both Articles 53(1) and 55 of the 1907 Hague

Eyal Benvenisti, 'Water conflicts during the occupation of Iraq', in *American Journal of International Law (AJIL)*, Vol. 97, No. 3, 2003, pp. 860–872.

89 ICJ, *Armed Activities on the Territory of Congo (Democratic Republic of Congo v. Uganda)*, Judgment, 19 December 2005, ICJ Reports 2005, para. 245.

90 Article 47 of the 1907 Hague Regulations and Article 33 of the Fourth Geneva Convention prohibit pillage.

91 Iain Scobbie, 'H2O after Oslo II: legal aspects of water in the Occupied Territories', in *Palestine Yearbook of International Law*, Vol. 8, 1994–1995, p. 92; Gamal Abouali, 'Natural resources under occupation: the status of Palestinian water under international law', in *Pace International Law Review*, 1998, Vol. 10, No. 2, p. 470.

92 1907 Hague Regulations, Art. 46.

93 *Ibid.*, Art. 56(1).

94 Groundwater bears many similarities to oil in the ground, which was found to be an immovable asset by the Court of Appeal of Singapore, 'N.V. de Bataafsche Petroleum Maatschappij v. The War Damage Commission', 13 April 1956, in Hersch Lauterpacht (ed.), *International Law Reports (ILR)*, Vol. 23, 1960, p. 810. See Edward R. Cummings, 'Oil resources in Occupied Arab Territories under the law of belligerent occupation', in *Journal of International Law and Economics*, Vol. 9, 1974, p. 558.

95 See A. Cassese, above note 88, p. 431.

Regulations place limitations upon the occupant's right of seizure and utilization.⁹⁶ The right of using water resources does not include the privilege to commit waste of the property involved nor can the population of the occupied territory be deprived of its essential means of survival.⁹⁷

Article 53(1) of the 1097 Hague Regulations provides that an occupying power may take public movable assets only if they 'may be used for military operations'. For example, bottles of water owned by an army and used for the provisioning of its troops, may be considered as used for military operations and may be taken by an occupying power.⁹⁸ Article 55 of the 1907 Hague Regulations deals with the protection of immovable public property. The occupying power is prohibited from claiming ownership over public property as it 'shall be regarded only as administrator and usufructuary'.⁹⁹ Although Article 55 has been criticized for its referral to concepts of private law, such as the usufruct, that would be particularly difficult to apply,¹⁰⁰ it contributes to limiting the rights and obligations of an occupying power on the uses of public property such as water resources.

According to the most common interpretation, this provision prohibits wanton dissipation and destruction of public property.¹⁰¹ Article 55 of the 1907 Hague Regulations imposes on an occupying power the duty to act as a *bonus paterfamilias* and to safeguard the capital of a source of water. This reading of Article 55 is linked to the obligations contained in Article 53 of the Fourth Geneva Convention prohibiting destruction of property.¹⁰²

96 See United States Military Tribunal, 'In re Goering', 1 October 1946, in Hersch Lauterpacht (ed.), *Annual Digest and Reports of Public International Law Cases*, London, Butterworth & Co., 1951, Vol. 13, 1946, Case No. 92, p. 215. See also United States Military Tribunal, 'In re Krupp', 30 June 1948, in *ibid.*, Vol. 15, 1948, Case No. 214, p. 622; United States Military Tribunal, 'In re Weizsaecher (Ministries Trial)', 14 April 1949, in Hersch Lauterpacht (ed.), *Annual Digest and Reports of Public International Law Cases*, London, Butterworth & Co., 1955, Vol. 16, 1949, Case No. 118, p. 360.

97 See United States Military Tribunal, 'In re Weizsaecher', above note 96, p. 361.

98 In this regard, the Court of Appeal of Orleans considered that wine vats owned by the French army and used for the provisioning of troops were 'used for military operations'. Court of Appeal of Orleans, 'French State v. Etablissements Monmousseau', 1948, in *ILR*, Vol. 15, pp. 596–597, as quoted in Yoram Dinstein, *The International Law of Belligerent Occupation*, Cambridge, Cambridge University Press, pp. 218–219.

99 1907 Hague Regulations, Art. 55.

100 Charles Rousseau, *Le droit des conflits armés*, Pedone, Paris, 1983, p. 160.

101 See United States Military Tribunal, 'In re Weizsaecher', above note 96, p. 361. In this regard, McDougal and Feliciano considered that 'the occupant may not wantonly dissipate or destroy the public resources and may not permanently alienate them (*salva rerum substantia*)'. Myres S. McDougal and Florentino P. Feliciano, *The International Law of War: Transnational Coercion and World Public Order*, New Haven Press, New Haven, 1994, p. 812. Moreover, according to Oppenheim, the occupying power 'may sell the crops from the public land, cut and sell timber in the public forests', under the condition of not exercising this right 'in a wasteful and negligent value so as to decrease the value of the stock and plant'. Lassa Oppenheim, *International Law: A Treatise*, 7th edition, Longman, London, 1972, Vol. 2, pp. 397–398, para. 134.

102 According to Article 53 of the Fourth Geneva Convention: '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 and cooperative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military operations'. Moreover, Article 147 of the Fourth Geneva Convention indicates as a 'grave breach' the 'extensive destruction and appropriation of property, not justified by military necessity and carried out unlawfully and wantonly'.

The obligations of an occupying power should be, however, the object of a broader interpretation. Preventing the destruction or wanton dissipation of water resources is not sufficient to ensure adequate protection for this indispensable resource for life.¹⁰³ The fact that water is an increasingly scarce resource in many regions of the world and that, in some cases, it may be non-renewable necessitates a broad interpretation of Article 55 of the 1907 Hague Regulations.

Beyond Article 55 of the 1907 Hague Regulations, larger duties imposed on the occupying power in the use of water resources may be supported by the principle of permanent sovereignty over natural resources. One of the main features of this principle, which emerged during the 1960s, is that it is both a state's right and a people's right.¹⁰⁴ In the case of occupation, full exercise of the right to use freely, control, and dispose of natural resources could take place only with the restoration of control (namely sovereignty) over the occupied territories to the states and peoples concerned.¹⁰⁵ As long as that does not materialize, the occupying power is under an obligation not to interfere with the exercise of permanent sovereignty by the population of occupied territories.¹⁰⁶ The principle of permanent

103 Some documents, such as a Memorandum of the US Department of State of 1976, dealing with the development by Israel of new oil fields in the Sinai Peninsula and Gulf of Suez, stated that developing new oil fields would be prohibited by the 1907 Hague Regulations. In reaching this conclusion, the State Department indicated that an occupying power has the right to exploit an existing oil field 'at the previous rate of exploitation' but not to develop a new oil field and exploit it 'even at a reasonable rate'. US Department of State, 'Memorandum of law on Israel's right to develop new oil fields in Sinai and the Gulf of Suez', in *ILM*, Vol. 16, 1977, p. 737. See also, Brice M. Clagett and O. Thomas Johnson, Jr., 'May Israel as a belligerent occupant lawfully exploit oil resources of the Gulf of Suez?', in *AJIL*, Vol. 72, No. 3, 1978, pp. 558–585.

104 Article 1 common to the International Covenant on Civil and Political Rights of 1966 and the International Covenant of Economic, Social and Cultural Rights of 1966 recognizes that: 'All peoples ... freely dispose of their natural wealth and resources In no case may a people be deprived of its own means of subsistence'. On the double facets of the principle of permanent sovereignty over natural resources, see Georges Abi-Saab, 'La souveraineté permanente sur les ressources naturelles', in Mohamed Bedjaoui, *Droit international: Bilan et perspectives*, Paris, Pedone, Vol. 2, 1991, p. 644.

105 It should be noted that, in its judgment on *Armed Activities on the Territory of Congo*, the ICJ, dealing with the principle of permanent sovereignty over natural resources, indicated that 'there is nothing in these General Assembly resolutions [1803 (XVII) of 14 December 1962, 3201 (S.VI) of 1 May 1974 and 3281 (XXIX) of 12 December 1974] which suggests that they are applicable to the specific situation of looting, pillage and exploitation of certain natural resources by members of the army of a State militarily intervening in another State ... The Court does not believe that this principle is applicable to this type of situation'. ICJ, *Armed Activities on the Territory of Congo*, above note 89, para. 244. The words used by the Court leave open the question of whether or not this principle would not be applicable to the specific situation of Congo or, in general, to occupied territories. Some clarifications on this issue may be found in the declaration of Judge Koroma noting that the 'exploitation of natural resources of a State by the forces of occupation contravenes the principle of permanent sovereignty over natural resources, as well as the Hague Regulations of 1907 and the Fourth Geneva Convention of 1949'. ICJ, *Armed Activities on the Territory of Congo (Democratic Republic of Congo v. Uganda)*, Declaration of Judge Koroma, p. 289, para. 11.

106 See in this regard, the resolutions of the UN General Assembly dealing with permanent sovereignty over natural resources in the occupied Palestinian and other Arab territories. See, *inter alia*, General Assembly resolutions 51/190, 16 December 1996, A/RES/51/190; 54/230, 22 December 1999, A/RES/54/230; 56/204, 21 December 2001, A/RES/56/204; 62/181, 19 December 2007, A/RES/62/181; 64/185, 21 December 2009, A/RES/64/185.

sovereignty over natural resources underscores the standpoint that water resources may only be used in connection with the needs of the occupation forces.¹⁰⁷ The limitations on the rights of using water resources rely on the fact that powers of an occupying power are transitory and that it only exercises a *de facto* authority.¹⁰⁸

A number of rules on the treatment of civilians included in the Fourth Geneva Convention contribute to the protection of access to water. The occupying power must ensure the survival of the population, as well as of public health, by preventing the spread of contagious diseases and epidemics.¹⁰⁹ Although Articles 55 and 56 of the Fourth Geneva Convention are confined to food and medical supplies, water supplies should be considered as included in those provisions.¹¹⁰ The fact that Additional Protocol I was extended to the provision of the ‘supplies essential to the survival of the population’¹¹¹ and that Article 54(1) and (2) of the same instrument prohibit starvation and attacks on drinking water installations, underscores the qualification of water as a food supply indispensable for the survival of the civilian population. Even if Article 54(1) and (2) of Additional Protocol I is not directed specifically to occupied territories, it is usually considered as applicable to them¹¹² and it highlights the status of water as an essential means of subsistence in occupied territory.

The contribution of other areas of law to the protection of water during armed conflict

International humanitarian law is not isolated from other areas of international law. It should be interpreted and applied within the context of general international law, taking into account other norms and instruments of international law such as those of human rights law and the law on transboundary water resources. The interplay between international humanitarian law and other areas of international law raises the issue of the application of the principle of *lex specialis*, as well as that of treaty interpretation.¹¹³

107 See United States Military Tribunal, ‘*In re Goering*’, above note 96, p. 215. In this regard, it should be noted that the judgment rendered by the Appeal Court of Singapore, in the case *De Bataafsche Petroleum v. War Damages Commission*, condemned the confiscation of oil in Malaysia from the Japanese forces. According to the Court, the oil confiscated was not only used for satisfying the military needs of the occupying forces but also for covering the needs of the civilian population in Japan. Court of Appeal of Singapore, above note 94, p. 810.

108 See 1907 Hague Regulations, Art. 42.

109 Fourth Geneva Convention, Arts. 55 and 56.

110 Supreme Court of Israel, *Physicians for Human Rights et al. v. IDF Commander of Gaza* (Rafiah case), 30 May 2004, HCJ 4764/04, excerpts in *Israeli Yearbook of Human Rights (IYHR)*, Vol. 35, 2005, p. 327.

111 Additional Protocol I, Art. 69(1).

112 Y. Dinstein, above note 98, pp. 148–149.

113 See ILC, ‘Conclusions of the work of the Study Group on the fragmentation of international law: difficulties arising from the diversification and expansion of international law’, in *Yearbook of the International Law Commission*, 2006, Vol. 2, Part Two, available at: http://untreaty.un.org/ilc/texts/instruments/english/draft%20articles/1_9_2006.pdf (last visited 7 September 2010).

A way to consider the relationship between several norms of international law is to look at treaty relations according to the principle of systemic integration.¹¹⁴ While international humanitarian law, human rights law, and the law on trans-boundary water resources confer different degrees of protection to water during armed conflict, the principle of systemic integration calls for interpreting different treaties and norms within the framework of international law regarded as a system. Moreover, this principle also pleads in favour of a search for compatibility between rules of law. When two or more rules exist on the same subject, they should, to the fullest extent possible, be interpreted in a compatible way. The principle of systemic integration may allow for reducing the risks of fragmentation between norms owing to different areas of law. At the same time, the application of this principle does not imply that possible conflicts or overlaps of norms cannot occur. However, its application may reduce the risk of possible conflict.¹¹⁵

Water and human rights law

The right to drinking water plays an increasingly important role in the international legal order. Among the most recent recognitions, an independent expert on the right to water and sanitation was appointed by the Human Rights Council in 2008 and a resolution recognizing the right to water and sanitation was adopted by the UN General Assembly in 2010.¹¹⁶ The right to water, which entitles everyone to have ‘sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses’,¹¹⁷ has been included in various international human rights instruments, such as the 1979 Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW),¹¹⁸ the 1989 Convention on the Rights of the Child (CRC),¹¹⁹ and the 2006 Convention on the Rights of Persons with Disabilities.¹²⁰ Other instruments provide implicitly for it, including the 1966 International Covenant on Economic, Social and Cultural Rights (ESCR Covenant).¹²¹

114 See Campbell McLachlan, ‘The principle of systemic integration and Article 31(3)(c) of the Vienna Convention’, in *International and Comparative Law Quarterly*, Vol. 54, 2000, pp. 279–320.

115 See ILC, Report of the Study Group, *Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, A/CN.4/L.682, 2006, paras. 411–412.

116 UN Human Rights Council resolution 7/22, 28 March 2008; and UN General Assembly resolution 64/292, 28 July 2010, A/RES/64/292.

117 Committee on Economic, Social and Cultural Rights (ESCR Committee), General Comment No. 15 on the Right to Water, 26 November 2002, UN Doc. E/C.12/2002/11, para. 2.

118 Article 14(2)(h) of the Convention on the Elimination of All Forms of Discrimination Against Women, A/RES/34/830 (1979), in *ILM*, Vol. 19, 1980, p. 33.

119 Article 24(2)(c) of the Convention on the Rights of the Child, A/RES/44/25 (1989), in *ILM*, Vol. 28, 1989, p. 1457.

120 Article 28(2)(a) of the International Convention on the Rights and Dignity of Persons with Disabilities, A/RES/61/106 (2006), available at: <http://www1.umn.edu/humanrts/instree/disability-convention2006.html> (last visited 7 September 2010).

121 International Covenant on Economic, Social and Cultural Rights (ESCR Covenant), A/RES/2200 (XXI) (1966), in *ILM*, Vol. 6, 1967, p. 360.

The protection of the right to drinking water during armed conflict is included among the ‘obligations to respect’ embodied in General Comment No. 15 adopted by the Economic, Social and Cultural Rights Committee (ESCR Committee) in 2002. This document, stating that ‘the right to water embraces those obligations by which States parties are bound under international humanitarian law’, recognizes the close relationship of the obligations embodied in human rights law and international humanitarian law.¹²²

The limitations on the access to water supplies indispensable to the survival of the civilian population are a violation of both international humanitarian law and human rights law. Although the application of human rights instruments in time of armed conflict is contested by some states, the jurisprudence of international courts such as the ICJ,¹²³ as well as UN bodies, has affirmed their application to situations of armed conflict.¹²⁴ On the subject of water, both the ESCR Committee and the Committee on the Rights of the Child addressed the issue of access to drinking water in occupied territory.¹²⁵ In favour of the argument that the obligations resulting from the ESCR Covenant are applicable in times of armed conflict, one may also mention that the ESCR Covenant does not contain provisions for derogation in case of armed conflict. The only derogations to the Covenant that a state may invoke are stated in its Article 4. This Article indicates that the limitations to the 1966 ESCR Covenant have to be ‘determined by law only in so far as this may be compatible with the nature of these rights and solely for the purpose of promoting the general welfare in a democratic society’. This establishes restrictive criteria for the derogation of the ESCR Covenant.¹²⁶

Beyond the issue of the derogation of human rights obligations during armed conflict, the application of these instruments also raises the issue of extra-territoriality. In other words, one may ask whether or not the right to water is applicable to acts performed by a state outside its own sovereign territory. Contrary to the 1966 Covenant on Civil and Political Rights¹²⁷ and the CRC,¹²⁸ the ESCR

122 ESCR Committee, General Comment No. 15, above note 117, paras. 21–22.

123 ICJ, *Nuclear Weapons*, Advisory Opinion, above note 83, para. 25; ICJ, *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, 9 July 2004, ICJ Reports 2004, p. 178, para. 105.

124 See Cordula Droegge, ‘Elective affinities? Human rights and humanitarian law’, in *International Review of the Red Cross*, Vol. 90, No. 871, 2008, pp. 507–509; Marco Sassòli, ‘Le droit international humanitaire, une “lex specialis” par rapport aux droits humains?’, in Andreas Auer, Alexander Fluckiger, and Michel Hottelier (eds), *Les droits de l’homme et la Constitution: études en l’honneur du Professeur Giorgio Malinverni*, Schulthess, Geneva, 2007, pp. 376–377.

125 ESCR Committee, *Concluding Observations: Israel*, 31 August 2001, E/C.12/1/Add.69, paras. 12–13; ESCR Committee, *Concluding Observations: Israel*, 26 June 2003, E/C.12/1/Add.90, para. 40; Committee on the Rights of the Child, *Concluding Observations: Israel*, 9 October 2002, CRC/C/15/Add.195, para. 51.

126 In its Advisory Opinion on the *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, the ICJ considered that restrictions to the 1966 Covenant could be invoked by states ‘solely for the purpose of promoting the general welfare in a democratic society. ICJ, *Wall case*, above note 123, para. 136.

127 Article 2(1) of the International Covenant on Civil and Political Rights, A/RES/2200A (XXI) (1966), in *ILM*, Vol. 6, 1967, p. 368.

128 CRC, above note 119, Art. 2(1).

Covenant does not contain provisions regarding its scope of application. This may be explained by the fact that the rights covered by this instrument are essentially territorial.¹²⁹ Protecting the right to water against the acts made by one state in the territory under its own control may however play an important role in limiting the impact caused by an armed conflict on the access to water. For example, one could consider the control that an occupying power might exercise over the management, distribution, and extraction of water resources in a territory under its control. On several occasions, both the ESCR Committee and the Committee on the Rights of the Child have reminded the government of Israel of its obligations regarding access to an equitable distribution and management of water resources in the Occupied Palestinian Territories.¹³⁰

The impacts of an armed conflict on a population's means of survival should be considered in the light of the specific conditions of water scarcity and aridity of some regions. For instance, in the context of Darfur – harsh terrain in which water and food sources are scarce – the destruction and poisoning of water wells and pumps could provide sufficient ground to believe that destruction of the means of survival of the civilian population constitutes a violation of both international humanitarian law and the right to water.

The right to water should be read in conjunction with the duties imposed by the rules of international humanitarian law governing the regime of occupation. Under this regime, it may be argued that, in some cases, water resources are exploited beyond the limit set by the rule of usufruct affirmed in Article 55 of the 1907 Hague Regulations and put at risk the survival of the civilian population, which must be ensured according to the Fourth Geneva Convention and Additional Protocol I.¹³¹ An argument of this kind could be made in the context of exploitation of the coastal aquifer in the Gaza Strip by Israel.¹³² In 2003, the UNEP *Desk Study on the Environment in Occupied Palestinian Territories* described the condition of the coastal aquifer as alarming, since it was characterized by 'lowering groundwater table, reduction in availability of fresh groundwater, and increased seawater intrusion and potential intrusion of deep brines'.¹³³ Many years of over-pumping by the occupying power have resulted in seawater intrusion and upcoming of saline groundwater. Moreover, the pollution of the groundwater in Gaza was also cited as a major problem.¹³⁴ This over-exploitation of water has

129 ICJ, *Wall case*, above note 123, para. 112.

130 ESCR Committee, *Concluding Observations: Israel*, 2001, above note 125, paras. 12–13; ESCR Committee, *Concluding Observations: Israel*, 2003, above note 125, para. 40; Committee on the Rights of the Child, *Concluding Observations: Israel*, above note 125, para. 51.

131 See Fourth Geneva Convention, Art. 55; Additional Protocol I, Art. 69(1).

132 An analysis of the interpretation of Article 55 of the Hague Regulations in the Gaza Strip can be found in Harold Ditcher, 'The legal status of Israel's water policies in the Occupied Territories', in *Harvard International Law Journal*, Vol. 35, No. 2, Spring 1994, pp. 572–573 and pp. 584–585.

133 UNEP, *Desk Study on the Environment in the Occupied Palestinian Territories*, above note 25, p. 38.

134 *Ibid.*, p. 39. A report by Amnesty International also points out that, in the Gaza Strip, '[t]he aquifer has been depleted and contaminated by over-extraction and by sewage and seawater infiltration, and 90–95 per cent of its water is contaminated and unfit for human consumption. Waterborne diseases are common'. Amnesty International, above note 59, pp. 4–5.

strongly limited the access of the Palestinians to water, and the pollution of the groundwater has threatened the survival and health of the population. This indicates that lack of respect of the norms of international humanitarian law may lead to simultaneous violations of the right to water.

The contribution of the law on transboundary water resources

The protection of water in times of armed conflict may also be read through the lens of the law on transboundary water resources. There are few instruments of this area of law that deal with the protection of water resources and water installations during such periods. The Helsinki Rules on the Uses of the Waters of International Rivers, adopted by the International Law Association (ILA) at its Helsinki Conference in 1966, contain only one article (Article XX) that refers to problems arising from armed conflict, and that article is confined to the limited subject of navigation.¹³⁵ Realizing the lacunae in the legal protection of water in wartime, the ILA addressed the issue ten years later. Thus, during its fifty-seventh Conference, held at Madrid in 1976, the ILA adopted a resolution on the protection of water resources and water installations in wartime.¹³⁶

While international humanitarian law protects water as a civilian object in general and as an object indispensable to the survival of the civilian population in particular, human rights law protects water through the right to sufficient and safe drinking water supplies. Yet neither area of law envisages the protection of water *per se*. The application of water agreements during armed conflict may provide for this protection, although this application raises the issue of the effects of armed conflict on treaties.¹³⁷ Some water instruments adopted at the beginning of the twentieth century contain explicit provisions on this topic.¹³⁸ Recent instruments such as the 1997 Convention on the Law of Non-Navigational Uses of

135 Article XX reads as follows: 'In times of war, other armed conflict, or public emergency constituting a threat to the life of the State, a riparian State may take measures derogating from its obligations under this Chapter to the extent strictly required by the exigencies of the situation, provided that such measures are consistent with its other obligations under international law. The riparian State shall in any case facilitate navigation for humanitarian purpose'. Helsinki Rules on the Uses of Waters of International Rivers, in *Report of the Fifty-second Conference of the International Law Association held at Helsinki, 14 to 20 August 1966*, 1967, p. 484.

136 International Law Association, *Report of the Fifty-seventh Conference held at Madrid, 30 August to 4 September 1976*, 1978, p. xxxiv.

137 In this regard, it should be noted that the ICJ decided not to deal with this issue in its advisory opinion on the Threat or Use of Nuclear Weapons of 1996. ICJ, *Nuclear Weapons*, Advisory Opinion, above note 83, para. 30.

138 The 1921 Statute on the Regime of Navigable Waterways of International Concern (focusing on the freedom of navigation) and the 1923 Geneva Convention relating to the Development of Hydraulic Power affecting more than one State (dealing with the carrying out of works for the exploitation of hydraulic power), state that in times of armed conflict they continue to be in force 'so far as such rights and duties [of belligerents and neutral powers] permit'. Article 15 of the Statute of the Regime of Navigable Waterways of International Concern, Barcelona, 20 April 1921, in *League of Nations Treaty Series (LNTS)*, Vol. 7, p. 37; Article 9 of the Convention relating to the Development of Hydraulic Power affecting more than one State, Geneva 9 December 1923, in *LNTS*, Vol. 36, p. 77.

International Watercourses (hereafter 1997 UN Watercourses Convention) and the 2008 ILC Draft Articles on Transboundary Aquifers also provide for norms in this respect.¹³⁹ In its Article 29, the 1997 UN Watercourses Convention affirms that international watercourses¹⁴⁰ 'shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules'.¹⁴¹ In this regard, it was commented that the obligation of riparian states to protect and use international watercourses in accordance with the UN Watercourses Convention remains in effect during an armed conflict.¹⁴²

Some specific agreements on water resources have continued to be in force during armed conflicts. For example, the Mekong Committee continued its activities during the conflict in Vietnam.¹⁴³ In the 1960s, it conducted analysis on the uses of the Mekong River and it gathered information on the characteristics of the river, including its topography and hydrography.¹⁴⁴ Similarly, during the armed hostilities between India and Pakistan in the 1960s and 1970s, the Indus Water Treaty of 1960 remained in force and the Permanent Indus Commission established by this Treaty continued to serve as the channel of communication between the two parties.¹⁴⁵ Another example of the fact that water provides one of the few paths for dialogue during an armed conflict is given by the role of the Joint Water Committee between Israeli and Palestinians.¹⁴⁶ This Committee set up under the Interim Agreement of 1995,¹⁴⁷ adopted a Joint Declaration for Keeping the Water Infrastructure Out of the Cycle of Violence in 2001.¹⁴⁸ This Declaration illustrates

139 United Nations Convention on the Non-Navigational Uses of International Watercourses, A/RES/51/869 (1997), in *ILM*, Vol. 36, 1997, p. 700; Draft Articles on the Law of Transboundary Aquifers, A/RES/63/124 (2008), available at: http://www.internationalwaterlaw.org/documents/intldocs/UNGA_Resolution_on_Law_of_Transboundary_Aquifers.pdf (last visited 7 September 2010).

140 According to the 1997 UN Watercourses Convention, a watercourse means 'a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus'. The term 'international watercourse' means 'a watercourse, parts of which are situated in different States'. Article 2(a) and (b) of the 1997 UN Watercourses Convention.

141 *Ibid.*, Art. 29.

142 ILC, Draft Articles on the Law of the Non-Navigational Uses of International Watercourses and Commentaries Thereto and Resolution on Transboundary Confined Groundwater, in *Yearbook of the International Law Commission*, 1994, Vol. 2, Part Two, p. 131.

143 The official name of this Committee was the Committee for the Coordination of Investigations of the Lower Mekong Basin. It was established by Cambodia, Laos, Thailand, and Vietnam in response to a decision taken by the United Nations Economic Commission for Asia and the Far East on 31 October 1957. See Vanessa Richard, *La coopération sur la gestion des cours d'eau internationaux en Asie*, La Documentation Française, Paris, 2005, p. 75.

144 See *ibid.*, pp. 75 and 82; Nguyen T. Dieu, *The Mekong River and the Struggle for Indochina: Water, War, and Peace*, Praeger, Westport, 1999, pp. 86–87.

145 Indus Water Treaty, Karachi, 19 September 1960, in *UNTS*, Vol. 419, p. 126.

146 For a review of the activities of the Committee see World Bank, *West Bank and Gaza: Assessment of Restriction on Palestinian Water Sector Development*, April 2009, pp. 47–53, available at: <http://siteresources.worldbank.org/INTWESTBANKGAZA/Resources/WaterRestrictionsReport18Apr2009.pdf> (last visited 7 September 2010).

147 Israeli–Palestinian Interim Agreement, 28 September 1995, in *ILM*, Vol. 36, 1997, p. 551, Annex III, Article 40, para. 11.

148 UNEP, *Desk Study on the Environment in the Palestinian Occupied Territories*, above note 25, p. 180.

that, even in time of thorny relations and violence between the parties, the Committee continued to hold its meetings and showed a common willingness to protect water from the effects of the hostilities. A final example to mention is related to the Senegal river: the relation between two of the riparian states of this river, Senegal and Mauritania, has, from time to time, been heated by issues relating to the boundary delimitation of this river. However, the common management of the river between riparian states has prevailed over the years, including in times of tension.¹⁴⁹

Both the 1997 UN Watercourses Convention and the 2008 ILC Draft Articles on the Law of Transboundary Aquifers consider the socio-economic needs of the riparian populations as one of the relevant factors to be considered by riparian states and aquifer states in order to realize an equitable and reasonable utilization of international watercourses and transboundary aquifers.¹⁵⁰ Moreover, they point out that ‘special regard shall be given to vital human needs’ in weighing different kinds of utilization.¹⁵¹ This requirement implies that riparian states cannot threaten the ‘provision of sufficient water to sustain human life, including both drinking water and water required for the production of food in order to prevent starvation’.¹⁵² These norms included in instruments belonging to the area of the law on transboundary water resources thus support the obligation of international humanitarian law to protect objects indispensable to the survival of the civilian population, as well as the right to water.

Beyond the protection offered by water agreements, there are also other international agreements that may be of help for protecting water *per se*. This is the case in the instruments of international environmental law. Examples include the Convention on Wetlands of International Importance especially as Waterflow Habitat (Ramsar Convention), which provides for the protection of specific ecosystems of watercourses such as deltas, and the Convention on Biological Diversity,

149 Makane Moïse Mbengue, ‘Le statut du fleuve Sénégal: visages actuels’, in Laurence Boisson de Chazournes and Salman M. A. Salman, *Water Resources and International Law*, The Hague Academy of International Law, Martinus Nijhoff, Leiden/Boston, 2005, p. 498.

150 Article 6(1) of the 1997 UN Watercourses Convention reads as follows: ‘Utilization of an international watercourse in an equitable and reasonable manner within the meaning of article 5 requires taking into account all relevant factors and circumstances, including: ... b) The social and economic needs of the watercourse States concerned; c) The population dependent on the watercourse in each watercourse State’. Article 5(1)(b) of the ILC Draft Articles on Transboundary Aquifers points out that ‘Utilization of a transboundary aquifer or aquifer system in an equitable and reasonable manner of draft article 4 requires taking into account ... (b) The social, economic and other needs, present and future, of the aquifer States concerned’.

151 Article 10(2) of the 1997 UN Watercourses Convention, devoted to the ‘Relationship between different kinds of uses’, points out that ‘[i]n the event of a conflict between uses of an international watercourses, it shall be resolved ... with special regard being given to the requirement of vital human needs’. According to Article 5(2) of the ILC Draft Articles on Transboundary Aquifers: ‘In determining what is equitable and reasonable utilization, all relevant factors are to be considered together and a conclusion reached on the basis of all the factors. However, in weighing different kinds of utilization of a transboundary aquifer or aquifer system, special regard shall be given to vital human needs’.

152 ILC, above note 142, p. 110.

which protects the biological resources of water resources.¹⁵³ The importance of the application of these instruments of international environmental law during an armed conflict has been indicated by the Rio Declaration noting that 'States shall ... respect international law providing protection for the environment in times of armed conflict',¹⁵⁴ although that document did not expressly mention the issue of the effects of armed conflicts on environmental agreements. For their part, the Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict have indicated that environmental agreements 'may continue to be applicable in times of armed conflict to the extent that they are not inconsistent with the applicable law of armed conflict'.¹⁵⁵

International water agreements provide a tool for dialogue and co-operation between parties involved in a dispute. In regions where there are risks of conflicts over water, instruments dealing with transboundary water resources may contribute to preventing the violence and hostilities between parties. For example, the issue of an uneven distribution of water resources is viewed as one of the potential reasons for conflict in the Central Asia region. The significance of water, especially related to its nexus with energy supplies along the Syr-Daria river, has caused incidents between Kirghizstan, Uzbekistan, and Kazakhstan.¹⁵⁶ The Environment and Security Initiative emphasized the risks of potential conflict caused by water in Central Asia and indicated the need for strengthening joint water bodies set up between the states in this region.¹⁵⁷

Water agreements may play an important role before and after an armed conflict. In particular, the agreements on transboundary water resources may contribute to mitigating the risks of conflicts and tensions between parties as well as create the conditions for durable peace in post-conflict countries.¹⁵⁸ They serve as

153 Convention on Wetlands of International Importance especially as Waterflow Habitat (Ramsar Convention), 2 February 1971, in *ILM*, Vol. 11, 1972, p. 963; Convention on Biological Diversity, 5 June 1992, in *ILM*, Vol. 31, 1992, p. 818.

154 Rio Declaration, above note 34, Principle 24.

155 Article 5 of the 'Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict', in *International Review of the Red Cross*, No. 311, 1996, available at: <http://www.icrc.org/web/eng/siteeng0.nsf/html/57JN38> (last visited 7 September 2010). In a resolution of 1994, the UN General Assembly invited 'all States to disseminate widely the revised guidelines for military manuals and instructions on the protection of the environment in times of armed conflict received from the International Committee of the Red Cross and to give due consideration to the possibility of incorporating them into their military manuals and other instructions addressed to their military personnel'. General Assembly resolution 49/50, 9 December 1994, A/RES/49/50, para. 11.

156 Environment and Security Initiative (ENVSEC Initiative), *Environment and Security: Transforming Risks into Cooperation: Central Asia – Ferghana/Osh/Khujand Area*, 2005, pp. 22–23, available at: http://www.grida.no/_res/site/file/publications/envsec/ferghana-report-eng.pdf (last visited 7 September 2010).

157 The ENVSEC Initiative was established by UNDP, UNEP, and the Organization for Security and Co-operation in Europe in 2003. NATO became an associate member in 2004. In 2006, two other institutions – the United Nations Economic Commission for Europe (UNECE) and the Regional Environment Center for Central and Eastern Europe (REC) – joined the initiative. See *ibid.*, p. 23.

158 For example, it may be noted that, during the 1980s and early 1990s, before the conclusion of the Peace Agreement between Israel and Jordan in 1994, the parties started to discuss the sharing of water during the so-called 'picnic table' talks. To illustrate the importance of water for both parties, the Peace

a channel of information and communication and build trust between states. Joint mechanisms and commissions established by water agreements may serve as an avenue for dialogue not only when peaceful relations between riparian states prevail but also when the relations are heated or even marred by violence.

Conclusion

The linkage between water and international peace and security should be studied taking into account both the fact that water may be a driver of hostilities between states and of national violence and the impact that armed conflict causes on water. Ensuring access to water, along with the protection of water resources, contributes to preventing conflicts and to the transition to peace in post-conflict states.¹⁵⁹

The damage or destruction caused by armed conflict on water installations and water resources needs to be minimized in order to ensure access to sufficient and safe water for the civilian population. Some norms of international humanitarian law, such as the obligation of not causing ‘widespread, long-term and severe damage’ to the environment, provide for a very high threshold of application. The violation of these norms may be difficult to prove, however, and may be insufficient to prevent risks to human health caused by unhealthy water.¹⁶⁰ Moreover, the norms of international humanitarian law do not deal with the protection of water *per se*. For instance, within the regime of occupation, international humanitarian law deals with water as a property as well as a food supply. However, the rules applicable to water in occupied territory should be read taking into account the specific characteristics of water as an indispensable natural resource for life as well as a part of the ecosystem. The linkage between international humanitarian law and other areas of law such as human rights law and the law on transboundary water resources may ensure better protection of water during armed conflict. The strengthening of the protection of water may contribute to a return to peace and to ensuring the satisfaction of vital human needs of the population.

Reading the relationship between the different norms protecting water during an armed conflict through the lens of the principle of systemic integration allows us to take into account the specificities of water and to ensure a better protection for it. As water is particularly vulnerable to the impacts of armed conflict, its protection should be vigorously pursued, with more emphasis placed on the similarities between norms of instruments of international law than on their differences. This will contribute to strengthening the protection of this natural resource in times when it is most at risk.

Agreement contains specific norms on this issue. See Treaty of Peace Between the State of Israel and the Hashemite Kingdom of Jordan, 26 October 1994, in *ILM*, Vol. 35, 1995, p. 46, Article 6 and Annex II.

159 See C. E. Bruch *et al.*, above note 58.

160 See *Final Report to the Prosecutor*, above note 82, conclusion.