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Environmental dimensions of international security

11.1 Introduction

As early as 1987, the World Commission on Environment and Development called, in its report *Our Common Future*, for States to expand their understanding of the concept of security to incorporate environmental considerations:

The first step in creating a more satisfactory basis for managing the interrelationships between security and sustainable development is to broaden our vision. Conflicts may arise not only because of political and military threats to national sovereignty; they may derive also from environmental degradation and the pre-emption of development options.¹

Starting in the 1990s² and particularly in the last decade, this core message has increasingly found expression in a number of concrete initiatives undertaken not only by environmental organisations but also, and remarkably, by organisations focusing on international security.

An apposite example is provided by the joint initiative launched in 2002 by the UNEP, the UNDP and the Organisation for Security and Cooperation in Europe ('OSCE') called 'An Environment Agenda for Security and Cooperation in South Eastern Europe and Central Asia' or 'ENVSEC Initiative'.³ This initiative aims to incorporate the environmental dimension into the security policies relating to countries and regions with significant exposure to conflict, such as the Balkans, the Caucasus or Central Asia. The initiative was subsequently enlarged to three other organisations, namely the North Atlantic Treaty Organisation ('NATO'), the United Nations Economic Commission for Europe ('UNECE') and the Regional Environmental Centre for Central and Eastern Europe ('REC'). The main idea underpinning this and other efforts to redefine the concept of security is the need to understand the impact of problems such as environmental degradation, asymmetric access to

¹ Report of the World Commission on Environment and Development, *Our Common Future*, 10 March 1987 ('Our Common Future' or 'Brundtland Report'), Chapter 11, para. 37.

² On previous efforts to recharacterise the concept of security, see J. Mathews, 'Redefining Security' (1989) *Foreign Affairs* 162.

³ See www.envsec.org (last visited on 20 April 2014).

natural resources or the transboundary movement of dangerous substances on the triggering, amplification or duration of conflicts or their resumption. More generally, these efforts highlight the active rather than merely passive role played by environmental change in connection with conflict.

The purpose of this chapter is to analyse how the environmental dimension of international security has been increasingly reflected in international law, whether to protect the environment from armed conflict or, conversely, to address environmental threats as conflict drivers. The first substantive section focuses on the protection of the environment in what has traditionally been called the law of war (11.2), which encompasses both the laws applicable to the conduct of hostilities and the law governing recourse to force. The following section analyses the link between environmental degradation and security (11.3), with particular reference to two environment-driven phenomena that pose significant security threats, namely environmentally-induced displacement and environmental security in post-conflict reconstruction.

11.2 The environment and the law of war

11.2.1 The environment and armed conflict

11.2.1.1 Overview

The protection of the natural environment in armed conflict became a major subject of legal discussion following the environmental damage caused by the United States during the Vietnam War through the use of agent orange, a chemical defoliant.⁴ The debate reignited at the time of the 1990–1 Gulf War⁵ and, some years later, as a result of the International Court of Justice's *Advisory Opinion on the Legality of Nuclear Weapons*.⁶ Over time, the question has been addressed from three main angles.

Most often, the scholarship on international humanitarian law has provided detailed assessments of the environmental coverage of some *jus in bello* instruments and rules ('first approach'). The epicentre of this approach is provided by Articles 35(3) and 55 of the First Additional Protocol to the Geneva Conventions,⁷ with seismic waves covering several instruments on

⁴ For a concise overview of these developments, see M. N. Schmitt, 'War and the Environment: Fault Lines in the Prescriptive Landscape', in J. E. Austin and C. E. Bruch (eds.), *The Environmental Consequences of War: Legal, Economic and Scientific Perspectives* (Cambridge University Press, 2000), pp. 87–136, at 87–92.

⁵ See K. Hulme, 'Armed Conflict, Wanton Ecological Devastation and Scorched Earth Policies: How the 1990–91 Gulf Conflict Revealed the Inadequacies of the Current Laws to Ensure Effective Protection and Preservation of the Natural Environment' (1997) 2 *Journal of Armed Conflict Law* 55.

⁶ *Legality of the Threat or Use of Nuclear Weapons*, ICJ Reports 1996, p. 226 ('*Legality of Nuclear Weapons*'), paras. 27–33.

⁷ Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts, 6 August 1977, 1125 UNTS 3 ('Additional Protocol I').

Approach 1	Approach 2	Approach 3
Environmental coverage of <i>jus in bello</i> norms	Whether and how environmental norms apply during armed conflict	Life cycle regulation of weapons as pollutants

Figure 11.1: Legal approaches to environmental protection in armed conflict

the means of warfare, such as the ENMOD Convention,⁸ and reaching as far as the potential existence of an ‘Environmental Martens Clause’,⁹ the definition of international crimes arising from harm to the environment during hostilities,¹⁰ or even the opportunity of a ‘Fifth Geneva Convention’ focusing on environmental protection.¹¹

In addition to this approach, since the 1992 Earth Summit much has been written on ‘whether’ international environmental law remains applicable in times of armed conflict, with particular emphasis on customary principles (e.g. prevention) and the wording of certain multilateral environmental agreements (‘MEAs’) (‘second approach’).¹² Aside from the question of ‘whether’, the second approach must also clarify ‘how’ international environmental law applies or, in other words, what is the specific impact of environmental norms in this context.

The ‘third approach’ focuses on the regulation of certain types of weapons (biological, chemical and nuclear weapons) but, unlike the first approach, it looks beyond their mere use and encompasses a larger portion of the life cycle of such weapons. From an environmental perspective, the third approach sees weapons as ‘pollutants’, the production, stockpiling, transportation, use and disposal of which must be regulated for their effects to be effectively neutralised. The scope and stringency of the regulatory framework varies from one type of weapon to the other, an issue that has raised vivid controversies in connection with nuclear weapons. Figure 11.1 summarises these three approaches.

In the following sections, we briefly discuss each approach highlighting the most relevant legal instruments and provisions as well as their main limitations.

⁸ Convention for the Prohibition of Military or other Hostile Use of Environmental Modification Techniques, 10 December 1976, 1108 UNTS 151 (‘ENMOD Convention’).

⁹ See Report of the Second IUCN World Conservation Congress, 4–11 October 2000, Resolution CGR2.CNV019 ‘Martens Clause for Environmental Protection’.

¹⁰ See M. Bothe, ‘Criminal Responsibility for Environmental Damage in Times of Armed Conflict’, in R. J. Grunawalt, J. E. King and R. S. McClain (eds.), *Protection of the Environment during Armed Conflict* (Newport RI: Naval War College, 1996), pp. 473–8. The 1998 Statute of the International Criminal Court (‘ICC’) contains a specific provision (Art. 8(a)(b)(iv)) establishing criminal responsibility for environmental damage.

¹¹ See G. Plant (ed.), *Environmental Protection and the Law of War: A ‘Fifth Geneva’ Convention on the Environment in Times of Armed Conflict?* (London: Belhaven Press, 1992).

¹² See e.g. S. Vöneky, ‘Peacetime Environmental Law as a Basis of State Responsibility for Environmental Damage Caused by War’ in Austin and Bruch, *supra* n. 4; K. Mollard-Bannelier, *La protection de l’environnement en temps de conflit armé* (Paris: Pédone, 2001).

11.2.1.2 The environment and *jus in bello*

11.2.1.2.1 'Specific' and 'general' regulation

International humanitarian law captures environmental considerations in two main forms. First, the Vietnam War led to the adoption of a treaty, the ENMOD Convention, prohibiting environmental modification techniques as a way of waging war as well as to the inclusion of two specific provisions in the 1977 Protocol I to the Geneva Conventions, Articles 35(3) and 55, relating to the protection of the natural environment. In addition, there is substantial evidence of the existence of some customary norms of *jus in bello* with specific environmental content.¹³

Commentators refer to this body of norms as 'specific', 'express' or 'special' regulation of environmental protection in armed conflict in order to contrast it with the much larger body of international humanitarian law which, despite the absence of any specific wording, protects the natural environment either through the regulation of means and methods of warfare or through the protection granted to specific objects (e.g. installations containing dangerous forces).

11.2.1.2.2 Specifically environmental norms

The two key instruments of *jus in bello* providing specific protection to the environment during armed conflict use similar language but, on close examination, they set clearly different thresholds. Article 35(3) of Additional Protocol I provides that '[i]t is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term *and* severe damage to the natural environment' (italics added). The same qualification is used by Article 55(1) of Additional Protocol I, with the additional requirement that the damage must affect human health:

Care shall be taken in warfare to protect the natural environment against widespread, long-term *and* severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and *thereby to prejudice the health or survival of the population.* (italics added)

Despite the similarity of these two provisions, their target is not the same. The question of redundancy arose during the negotiations of the Additional Protocol and it was eventually discarded on the grounds that, whereas Article 35(3) places a general limitation on the means of waging war, Article 55 seeks to protect the civilian population that may be harmed by environmental degradation.¹⁴

Duplication was also an issue with respect to the ENMOD Convention, which was also being negotiated in Geneva in the mid 1970s. It was, however,

¹³ See J.-M. Henckaerts and L. Doswald-Beck, *Customary International Humanitarian Law* (Cambridge University Press, 2009), Rules 43, 44 and 45.

¹⁴ Y. Sandoz, C. Swinarsky and B. Zimmermann, *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Convention of 12 August 1949* (Leiden/Geneva: Martinus Nijhoff/International Committee of the Red Cross, 1987) ('ICRC Commentary'), ad Art. 35(3), para. 1449.

discarded because, as noted by the United States delegation, the provisions in Additional Protocol I covered any weapon, whilst the ENMOD Convention only concerned environmental modification techniques as a weapon.¹⁵ Moreover, Article 1(1) of the ENMOD Convention uses the conjunction 'or' instead of 'and' and, as a result, the three adjectives used to qualify the level of environmental damage are not envisioned as cumulative requirements.¹⁶

Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, longlasting *or* severe effects as the means of destruction, damage or injury to any other State Party. (italics added)

In addition, the interpretation of each of the adjectives used in Article 1(1) differs in important ways from the understanding of those used in Articles 35(3) and 55(1) of Additional Protocol I. The latter were understood as being much more demanding than the former (e.g. 'long-term' would refer to decades¹⁷ whereas 'longlasting' would only require 'a period of months, approximately a season'¹⁸) and some delegations expressly stated that Additional Protocol I had to be interpreted in this regard without reference to other international instruments, such as the ENMOD Convention.¹⁹

From a practical perspective, these differences can have significant consequences. Specifically, it is widely considered that the threshold for the operation of Articles 35(3) and 55 is so high that it provides little or no protection to the natural environment.²⁰ One illustration is provided by the Report of the Committee set up by the Prosecutor of the International Criminal Tribunal for the Former Yugoslavia ('ICTY') to advise her on the grounds to develop a case against NATO forces in connection, *inter alia*, with the use of depleted uranium projectiles and the resulting environmental damage during the 1999 Kosovo conflict.²¹ In its assessment, the Committee considered whether Articles 35(3) and 55 of Additional Protocol I could provide legal grounds for prosecution. At the outset, the Report acknowledges that:

Articles 35(3) and 55 have a very high threshold of application. Their conditions for application are extremely stringent and their scope and contents

¹⁵ *Ibid.*, para. 1450. ¹⁶ *Ibid.*, para. 1457. ¹⁷ *Ibid.*, para. 1454.

¹⁸ ENMOD Convention, *supra* n. 8, understandings relating to Art. 1 (the other adjectives are characterised as follows: "widespread": encompassing an area on the scale of several hundred square kilometres' and "severe": involving serious or significant disruption or harm to human life, natural and economic resources or other assets.').

¹⁹ See ICRC Commentary, *supra* n. 14, ad Art. 35(3), para. 1459.

²⁰ United Nations Environment Programme, *Protecting the Environment During Armed Conflict. An Inventory and Analysis of International Law* (Nairobi: UNEP, 2009) ('UNEP Report'), p. 11 (and authorities referred to therein).

²¹ Final Report to the Prosecutor by the Committee Established to Review the NATO Bombing Campaign against the Federal Republic of Yugoslavia, 13 June 2000 ('Report to the Prosecutor').

imprecise . . . For instance, it is thought that the notion of 'long-term' damage in Additional Protocol I would need to be measured in years rather than months, and that as such, ordinary battlefield damage of the kind caused to France in World War I would not be covered.²²

It then reached the conclusion that 'on the basis of information currently in its possession . . . the environmental damage caused during the NATO bombing campaign does not reach the Additional Protocol I threshold'.²³ The Committee noted in passing the disagreement regarding the application of these provisions to the vast environmental damage caused by Iraq during the Gulf War 1990–1,²⁴ which is further evidence of the inadequacy of the threshold set in Additional Protocol I to protect the natural environment. The main hypothesis where environmental damage is likely to be 'widespread, long-term and severe' is the detonation of nuclear weapons and, yet, in its 1996 Advisory Opinion the ICJ was not able to rule out their legality 'in an extreme circumstance of self-defence, in which the very survival of a State would be at stake'.²⁵ Another aspect of the Committee's Report that deserves attention is the reference to customary rules of *jus in bello* of both specific and general nature.²⁶ This reference is noteworthy because customary law applies to all States, even those such as the United States or Israel, that have not ratified Additional Protocol I.

An important study undertaken under the aegis of the ICRC has indeed concluded that customary international humanitarian law specifically protects the natural environment in at least three ways.²⁷ First, the general principles applicable to the protection of objects (distinction between military and non-military targets, military necessity and proportionality) specifically protect the natural environment:

Rule 43. The general principles on the conduct of hostilities apply to the natural environment:

- A. No part of the natural environment may be attacked, unless it is a military objective.
- B. Destruction of any part of the natural environment is prohibited, unless required by imperative military necessity.
- C. Launching an attack against a military objective which may be expected to cause incidental damage to the environment which would be excessive in relation to the concrete and direct military advantage anticipated is prohibited.²⁸

Second, the selection and use of methods and means of warfare is also limited by the need to protect the natural environment:

²² *Ibid.*, para. 15. ²³ *Ibid.*, para. 17. ²⁴ *Ibid.*, para. 15.

²⁵ *Legality of Nuclear Weapons*, *supra* n. 6, operative part, para. 2)E.

²⁶ *Report to the Prosecutor*, *supra* n. 21, para. 15.

²⁷ See Henckaerts and Doswald-Beck, *supra* n. 13.

²⁸ *Ibid.*, p. 143 (and authorities referred to therein)

Rule 44. Methods and means of warfare must be employed with due regard to the protection and preservation of the natural environment. In the conduct of military operations, all feasible precautions must be taken to avoid, and in any event to minimise, incidental damage to the environment. Lack of scientific certainty as to the effects on the environment of certain military operations does not absolve a party to the conflict from taking such precautions.²⁹

The term 'precaution' used in this rule is best understood as encompassing references to both the prevention principle and the precautionary principle/approach.³⁰ Indeed, there is no doubt that military operations create a 'risk' for the environment (i.e. a non-negligible probability of an adverse outcome) which requires careful prior assessment. The scientific uncertainty mentioned in the rule differs conceptually, at least in most cases, from the uncertainty faced by peacetime regulation to the extent that, in the latter case, there is doubt as to the adverse nature of the effects whereas in the former case the effects on the environment are undoubtedly negative. Thus, 'precaution' understood as something more than 'prevention' would only come into play under very specific circumstances, such as the use of particular weapons whose effects on the environment are truly unknown.

Third, according to the ICRC study, the rules stated in Articles 35(3) and 55(1) of Additional Protocol I and Article 1(1) of the ENMOD Convention have crystallised into a customary rule with the following content:

Rule 45. The use of methods or means of warfare that are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment is prohibited. Destruction of the natural environment may not be used as a weapon.³¹

According to the study, the persistent objection to this rule by the United States, France or the United Kingdom can, at best, exclude its application to them in connection with the use of nuclear weapons but not as a general matter. This is because their contrary practice beyond the specific case of nuclear weapons is not consistent and, more generally, because they can only claim to be 'specially affected' with respect to nuclear weapons and not for any type of weapons.³² Whether or not this specific customary rule is applicable to these countries 'it does not prevent any use of nuclear weapons being found unlawful on the basis of other rules, for example the prohibition of indiscriminate attacks ... and the principle of proportionality.'³³ This conclusion follows from the proper understanding of the relations between Rule 45 and other more general rules. As explained in the study, Rule 45 is absolute. If its stringent threshold is reached, then military necessity or proportionality cannot offer any form of justification. Conversely, whilst Rules 43 and 44 do

²⁹ *Ibid.*, p. 147 (and authorities referred to therein). ³⁰ On these principles see Chapter 3.

³¹ Henckaerts and Doswald-Beck, *supra* n. 13, p. 151 (and the authorities referred to therein).

³² *Ibid.*, p. 154. ³³ *Ibid.*, p. 155.

not set such a stringent threshold, the resulting damage to the environment can be justified (and therefore a violation of the rule avoided) by military necessity or on the grounds that all due caution was taken. This is also why it is important to consider not only the protection afforded to the natural environment by 'specific' provisions of *jus in bello* but also the more 'general' rules and principles that may potentially apply in this context.

11.2.1.2.3 General norms of *jus in bello*

There are many norms of *jus in bello*, whether treaty-based or of customary nature, that can be mobilised to provide protection to the natural environment. These norms are generally concerned either with the protection of certain 'objects', understood as encompassing the civilian population, civilian property and some specific resources/installations, or with the regulation of the 'methods and means' of warfare, typically excluding the use of certain weapons deemed to cause more damage than what is militarily required.³⁴ This is not the place to review the entire range of relevant norms,³⁵ but a brief reference to some of them seems warranted to understand the broader principles and rules from which the specific norms discussed in the preceding section are derived.

The principles of distinction, military necessity and proportionality are relevant for environmental protection purposes to the extent that the natural environment can be considered as civilian property or is important for the subsistence of the civilian population. The principle of distinction is stated in Articles 48 and 52 of Additional Protocol I. According to the latter:

Article 52 – General protection of civilian objects

1. Civilian objects shall not be the object of attack or of reprisals. Civilian objects are all objects which are not military objectives as defined in paragraph 2.
2. Attacks shall be limited strictly to military objectives. In so far as objects are concerned, military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.

The principle of military necessity was stated as early as 1907 in Article 23(g) of the Hague Regulations annexed to the IV Hague Convention on the Laws and Customs of War on Land:

In addition to the prohibitions provided by special Conventions, it is especially forbidden: . . .

³⁴ See *infra* Section 11.2.1.4.

³⁵ See Mollard-Bannelier, *supra* n. 12. For shorter inventories see: UNEP Report, *supra* n. 20, pp. 12–21; Schmitt, *supra* n. 4, pp. 94–104. The following overview is based on the study by Schmitt, updated when necessary to integrate subsequent developments.

(g) To destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war.³⁶

As for proportionality, Articles 51(5)(b) and 57(2)(a)(iii) of Additional Protocol I state the principle in connection with any damage that appears excessive as compared to the military advantage sought:

Article 51 – Protection of the civilian population . . .

5. Among others, the following types of attacks are to be considered as indiscriminate: . . .

(b) an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.

Article 57 – Precautions in attack . . .

2. With respect to attacks, the following precautions shall be taken:

(a) those who plan or decide upon an attack shall: . . .

(iii) refrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.

Significantly, the violation of some norms relevant for the protection of the environment may entail heightened consequences in terms of enforcement, including a duty of the State where the alleged perpetrator is found to prosecute or extradite.³⁷ By way of illustration, violation of Article 53 of the IV Geneva Convention (destruction by the occupying power of certain civilian property³⁸) may, under certain circumstances defined in Article 147, amount to a 'grave breach' of the Convention. Similarly, violation of Article 56 of Additional Protocol I (which prohibits attacks on installations, such as dykes, dams or nuclear electricity facilities, when that may unleash dangerous forces) can amount to a 'grave breach' of the Protocol if launched with a certain intent or *mens rea*.³⁹

The environmental relevance of the general principles and rules of *jus in bello* discussed so far has seldom been addressed by international(ised) courts either from an individual (criminal responsibility) or an inter-State

³⁶ Convention (No. IV) respecting the Laws and Customs of War on Land and its Annex: Regulations concerning the Laws and Customs of War on Land, 18 October 1907, 205 CTS 277 ('Hague Convention IV').

³⁷ See Geneva Convention (IV) Relative to the Protection of Civilian Persons in Time of War, 12 August 1949, 75 UNTS 287 ('IV Geneva Convention'), Art. 146; Additional Protocol I, *supra* n. 7, Art. 85(1). The literature on the duty to prosecute or extradite (*aut dedere aut judicare*) is extensive. See among others L. Reydam, *Universal Jurisdiction. International and Municipal Legal Perspectives* (Oxford University Press, 2003); R. O'Keefe, 'The Grave Breaches Regime and Universal Jurisdiction' (2009) 7 *Journal of International Criminal Justice* 811.

³⁸ Article 55 of the Hague Regulations, *supra* n. 36, assimilated the duties of the occupying power with respect to the property and resources of the occupied party as those of an usufructuary.

³⁹ Additional Protocol I, *supra* n. 7, Art. 85(3)(c).

(international responsibility) perspective. From a criminal responsibility perspective, an interesting illustration is provided by the so-called *Hostage Case*.⁴⁰ One of the defendants in this case was Lothar Rendulic, the commander-in-chief of the German troops in Norway, who ordered the destruction of all shelter and means of subsistence as part of his military retreat from Norwegian territory. This order, prompted by Rendulic's (mistaken) understanding that he was being chased by Russian troops, was effectively carried out between October and November 1944. Yet, Rendulic was acquitted on the grounds that he reasonably believed his action to be required by military necessity. According to the tribunal:

The evidence shows that the Russians had very excellent troops in pursuit of the Germans. Two or three land routes were open to them as well as landings by sea behind the German lines . . . The information obtained concerning the intentions of the Russians was limited . . . It was with this situation confronting him that he carried out the 'scorched earth' policy in the Norwegian province of Finmark . . . The destruction was as complete as an efficient army could do it . . . There is evidence in the record that there was no military necessity for this destruction and devastation. An examination of the facts in retrospect can well sustain this conclusion. But we are obliged to judge the situation as it appeared to the defendant at the time. If the facts were such as would justify the action by the exercise of judgment, after giving consideration to all the factors and existing possibilities, even though the conclusion reached may have been faulty, it cannot be said to be criminal.⁴¹

This case shows the limitations of resorting to general principles of *jus in bello*, under which environmental devastation may be justified by military necessity. However, the laws of war have made some progress since the times of the *Hostage Case*. In the aforementioned NATO case, the Committee noted indeed, by reference to Article 52 of Additional Protocol I, that:

Even when targeting admittedly legitimate military objectives, there is a need to avoid excessive long-term damage to the economic infrastructure and natural environment with a consequential adverse effect on the civilian population.⁴²

Moving to the inter-State level, the ICJ has analysed the relevance of the principles of military necessity, proportionality and the duties of the occupying powers in an environmental light in two main cases. In the aforementioned Advisory Opinion on the *Legality of Nuclear Weapons*, the Court highlighted the implications of environmental protection for the proper interpretation of necessity and proportionality:

⁴⁰ *Hostage Case (US v. List)*, 11 TWC 759 (1950). See also *High Command Case (US v. Von Leeb)*, 11 TWC 462 (1950). The cases were brought before the US authorities in their German occupation zone. Both cases are referred to in Schmitt, *supra* n. 4, p. 99.

⁴¹ Excerpt reproduced in G. D. Solis, *The Law of Armed Conflict: International Humanitarian Law in War* (Cambridge University Press, 2010), p. 289.

⁴² *Report to the Prosecutor*, *supra* n. 21, para. 18.

States must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate military objectives. Respect for the environment is one of the elements that go to assessing whether an action is in conformity with the principles of necessity and proportionality.⁴³

In a subsequent case, the Court concluded that Uganda, as the occupying power of the Ituri district in the Democratic Republic of the Congo ('DRC'), had violated its obligation of vigilance 'by not taking adequate measures to ensure that its military forces did not engage in the looting, plundering and exploitation of the DRC's natural resources'.⁴⁴ As the basis for this obligation, the Court referred *inter alia* to Articles 43 and 47 of the Hague Regulations and Article 33 of the IV Geneva Convention.⁴⁵ Interestingly, the Court also referred to a peacetime treaty, i.e. Article 21 of the African Charter on Human and Peoples' Rights (collective right to natural resources), as a further legal ground supporting its conclusion.⁴⁶ This is consistent with the prior practice of the Court, which considers that human rights treaties remain applicable despite the outbreak of armed conflict.⁴⁷ As discussed next, the same question has been asked with respect to the application of peacetime environmental treaties during armed conflict.

11.2.1.3 Armed conflict and environmental law⁴⁸

11.2.1.3.1 Overview

In its Advisory Opinion on the *Legality of Nuclear Weapons*, issued only a few years after the 1992 Earth Summit, the ICJ refrained from giving a clear answer to the question of 'whether' environmental treaties remain applicable during armed conflict. Instead, the Court reformulated the question to ask 'whether the obligations stemming from these treaties were intended to be obligations of total restraint during military conflict'.⁴⁹ It then concluded that such was not the case, while stressing at the same time that States had to interpret their right to self-defence and their *jus in bello* obligations in the light of environmental considerations.⁵⁰ The 'whether' question thus left open has largely occupied commentators ever since.⁵¹

⁴³ *Legality of Nuclear Weapons*, *supra* n. 6, para. 30.

⁴⁴ *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgment, ICJ Reports 2005, p. 168 ('DRC v. Uganda'), para. 246.

⁴⁵ *Ibid.*, paras. 245 and 250. ⁴⁶ *Ibid.*, para. 245.

⁴⁷ *Legality of Nuclear Weapons*, *supra* n. 6, para. 25; *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory*, Advisory Opinion, ICJ Reports 2004, p. 136 ('Wall Advisory Opinion'), para. 106.

⁴⁸ This section draws upon M. Kunz and J. E. Viñuales, 'Environmental Approaches to Nuclear Weapons', in G. Nystuen, S. Casey-Maslen and A. Golden Bersagel (eds.), *Nuclear Weapons under International Law* (Cambridge University Press, 2014), pp. 269–91.

⁴⁹ *Legality of Nuclear Weapons*, *supra* n. 6, para. 30. ⁵⁰ *Ibid.*, paras. 30–3.

⁵¹ See references mentioned *supra* n. 12.

In assessing the extent to which environmental treaties may apply in armed conflict, in addition to the usual criteria defining the scope of application of a treaty (scope *ratione materiae, personae, loci, temporis*), one needs to consider a number of challenges that have traditionally been raised by scholars and practitioners to the application of peacetime treaties in times of armed conflict. There are three types of effects that the outbreak of hostilities may directly or indirectly have on peacetime treaties, namely it may (i) affect the continuance in force or in operation of such treaties for belligerent States (suspension, withdrawal, termination), (ii) trigger a treaty-specific response (derogations, flexibilities, enhanced protection), and/or (iii) give rise to complex interactions with other norms, particularly of *jus in bello*. In the next sections, these three effects are discussed in turn.

Before undertaking the analysis, two observations are in order. First, each one of these potential effects must be considered before moving to the next effect, and the above is the logical order in which to proceed. Indeed, if environmental treaties are terminated or suspended in armed conflict, there would be little interest in considering the second and third potential effects. Likewise, if a given treaty continues in operation but States are allowed under the treaty to derogate from its core provisions in situations of national emergency, there is no need to clarify the interaction between such norms and *jus in bello* obligations. Only if a relevant environmental treaty obligation survives these preliminary tests, its concurring application with *jus in bello* obligations will require further clarification. The latter caveat leads to the second observation, namely that, as we move up the analytical ladder just described, the question of ‘whether’ environmental norms apply in armed conflict subtly becomes one of ‘how’ they do so.

11.2.1.3.2 Continued operation

Termination of a treaty, its denunciation or the withdrawal of a party, as well as suspension of the operation of a treaty for some or all of its parties, may take place only in accordance with the provisions of the given treaty or under the default rules codified by the Vienna Convention on the Law of Treaties (‘VCLT’).⁵² However, the latter contains a general reservation in its Article 73 pursuant to which the Convention ‘shall not prejudice any question that may arise in regard to a treaty from . . . the outbreak of hostilities between States’. The International Law Commission (‘ILC’) decided to address this point in 2004 and, in 2011, adopted a set of *Draft Articles on the Effects of Armed Conflict on Treaties*.⁵³

The 2011 Draft Articles deal specifically with the first type of effect, continuance in operation. The system proposed by the ILC is built in four stages.

⁵² Vienna Convention on the Law of Treaties, Vienna, 23 May 1969, 1155 UNTS 331 (‘VCLT’), Art. 42(2).

⁵³ ILC, Draft Articles on the Effects of Armed Conflict on Treaties, 9 December 2011, GA Res. 66/99, UN Doc. A/RES/66/99 (‘2011 ILC Draft Articles’).

First and most importantly, the Draft Articles state that armed conflict does not *ipso facto* terminate or suspend the operation of treaties between belligerents or with third States (Article 3). Second, and unsurprisingly, if a given treaty contains provisions regulating its operation in the event of an armed conflict, those provisions govern the situation (Article 4). Third, when no such provisions exist, as is the case for the vast majority of environmental treaties,⁵⁴ the international rules on treaty interpretation apply in order to determine whether a given treaty may be (unilaterally) suspended, terminated or denounced as a result of an armed conflict (Article 5). This determination must not only be based on the interpretation of relevant treaty provisions, but also take into account a variety of broader factors linked to the characteristics of the armed conflict and treaty considered, in particular the subject-matter of the latter, with treaties on certain subjects – including those on environmental protection and waterbodies – being presumed to continue in operation, in whole or in part, during armed conflict (Article 6, Article 7 and Annex). Fourth and finally, the suspension, denunciation or termination of a treaty ‘as a consequence of an armed conflict’ are characterised in the remainder of the Draft Articles, adapting the provisions of the VCLT to the context of armed conflict while referring to the rules of general international law for questions not treated in the Draft Articles.⁵⁵ These contours specify, in short, that the right to suspend or withdraw from certain treaties in the event of an armed conflict, which is complementary to the customary grounds embodied in the VCLT,⁵⁶ may not benefit the aggressor State,⁵⁷ and is forfeited if the State expressly or by its conduct acquiesces in the treaty’s continued operation.⁵⁸ It is important to note in this context that prior notification of the intention to

⁵⁴ Most major multilateral environmental treaties make no explicit reference to their continued operation during hostilities. Examples include: Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, 3 March 1973, 993 UNTS 243 (‘CITES’); Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 23 June 1979, 1651 UNTS 333 (‘CMS’); Montreal Protocol on Substances that Deplete the Ozone Layer, 16 September 1987, 1522 UNTS 3 (‘Montreal Protocol’); Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 22 March 1989, 1673 UNTS 57 (‘Basel Convention’); Convention on Biological Diversity, 5 June 1992, 1760 UNTS 79 (‘CBD’); United Nations Framework Convention on Climate Change, Rio de Janeiro, 9 May 1992, 1771 UNTS 107 (‘UNFCCC’); Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 10 September 1998, 2244 UNTS 337 (‘PIC Convention’); Stockholm Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, 2256 UNTS 119 (‘POP Convention’). See UNEP Report, *supra* n. 20, pp. 39–40.

⁵⁵ 2011 ILC Draft Articles, *supra* n. 53, Arts. 8–18. The commentary ad Art. 8 explains that the ILC intentionally omitted to treat matters of lawfulness of agreements on modification or suspension, such as the conditions for modification or suspension of a multilateral treaty by certain of the parties only, contained in Arts. 41 and 58 VCLT, ‘preferring to leave such matters to the operation of general rules of international law, including those reflected in the 1969 Vienna Convention’ (para. 5).

⁵⁶ *Ibid.*, Art. 18. ⁵⁷ *Ibid.*, Art. 15. ⁵⁸ *Ibid.*, Art. 12.

suspend or withdraw from a treaty is a formal requirement and may encounter objections, in which case States must pursue peaceful means of dispute resolution.⁵⁹ Thus, as a general matter, under the 2011 ILC Draft Articles, environmental treaties are presumed to continue in operation during armed conflict, unless the treaty provides otherwise.

One important question in this regard concerns the customary status of the rules formulated in the 2011 ILC Draft Articles. The fundamental principle rejecting automatic suspension of treaties is clearly consistent with the jurisprudence of the ICJ. The Court dealt with this question recently in connection with human rights treaties in two advisory opinions⁶⁰ and one contentious case.⁶¹ In these cases, the Court made no reference to the old doctrine of automatic suspension of the operation of peacetime treaties in the event of an armed conflict, focusing instead on the second and third types of effect, discussed below. Whereas the ICJ seems to reject the classical theory of *ipso facto* suspension or termination of peacetime treaties during hostilities, this theory featured in a recent award of the Eritrea Ethiopia Claims Commission.⁶² The Commission reasoned that in cases:

where the intention to maintain a treaty in operation during hostilities is not plainly apparent from the text or the surrounding circumstances . . . [w]riters generally maintain that parties should be presumed to intend that such treaties be at least suspended during the hostilities. The Commission concludes that this principle applies here.⁶³

The conclusion of the Commission on this point did not seem to take into account the relevant ICJ jurisprudence or the work of the International Law Commission on the topic ongoing at the time. For this and other case-specific reasons,⁶⁴ the award is unlikely to inform the contemporary approach adopted in the ICJ practice. This is all the more important if one considers that, as noted earlier, most environmental treaties do not explicitly address their operation during hostilities.

⁵⁹ *Ibid.*, Art. 9.

⁶⁰ See *Legality of Nuclear Weapons*, *supra* n. 6, para. 25; *Wall Advisory Opinion*, *supra* n. 47, para. 106.

⁶¹ *DRC v. Uganda*, *supra* n. 44, paras. 216, 219–20.

⁶² Eritrea Ethiopia Claims Commission, *Final Award – Pensions: Eritrea's Claims 15, 19 & 23* (19 December 2005), RIAA, vol. XXVI, p. 471.

⁶³ *Ibid.*, para. 30.

⁶⁴ The treaty at stake was a bilateral treaty which obliged Ethiopia to pay pensions to former Ethiopians living in Eritrea after it formally gained independence in 1993, but it was only an interim arrangement while the negotiations on a permanent solution continued (which were interrupted by the armed conflict) and in any event the treaty could be terminated by either of the parties upon twelve months' notice. Ethiopia argued that the treaty ended because of one of these two reasons, not *ipso facto* suspension under the law of treaties as the Commission itself acknowledged in para. 31.

11.2.1.3.3 Treaty-specific response

There are a number of environmental treaties that do contain provisions allowing for derogations in exceptional circumstances such as armed conflicts, or which give some leeway to States in the implementation of their substantive obligations by way of flexible formulations. Conversely, some treaties provide for unaltered or even enhanced environmental protection during armed conflicts. It is this treaty-specific response to such situations that we now turn to.⁶⁵

Regarding, first, the most protective category, some environmental treaties make it clear that they seek to prevent further deterioration of their environmental object of protection even in the event of an armed conflict. The main illustration is Article 11(4) of the World Heritage Convention,⁶⁶ which provides that the World Heritage Committee shall keep a 'List of World Heritage in Danger' in addition to the normal 'World Heritage List', including 'only such property forming part of the cultural and natural heritage as is threatened by serious and specific dangers, such as . . . the outbreak or the threat of an armed conflict'. The Operational Guidelines further specify the criteria for the inclusion of a site in this list.⁶⁷ Here the occurrence of an armed conflict is a trigger for strengthening the protective regime of the affected World Heritage site that may go from a mere 'message of concern' sent by the Committee, to a system of international assistance to preserve the site as much as possible.⁶⁸ In this context it is also worth pointing to Article 6(3) of the WHC, according to which States parties undertake 'not to take any deliberate measures which might damage directly or indirectly the cultural and natural heritage referred to in Articles 1 and 2 situated on the territory of other States Parties to this Convention'.

Some other treaties take a reverse stance and, instead of heightening the protection of the environment, they grant more flexibility in exceptional circumstances threatening 'urgent national interest'⁶⁹ or 'the paramount interest of the State',⁷⁰ either contemplating the possibility to derogate from certain treaty obligations or specifying less stringent protection obligations in such cases. By way of illustration, Article 4(2) of the Ramsar Convention describes

⁶⁵ For an inventory, see UNEP Report, *supra* n. 20, pp. 35–9.

⁶⁶ Convention Concerning the Protection of the World Cultural and Natural Heritage, 16 November 1972, 1037 UNTS 151 ('WHC').

⁶⁷ UNESCO World Heritage Committee, 'Operational Guidelines for the Implementation of the World Heritage Convention', UN Doc. WHC.13/01, July 2013, paras. 177–82, available at: <http://whc.unesco.org/en/guidelines> (last visited on 20 April 2014).

⁶⁸ *Ibid.*, paras. 183–9.

⁶⁹ Convention on Wetlands of International Importance especially as Waterfowl Habitat, 2 February 1971, 996 UNTS 245 ('Ramsar Convention'), Art. 4(2).

⁷⁰ African Convention on the Conservation of Nature and Natural Resources, Algiers, 15 September 1968, 1001 UNTS 3, Art. XVII(1)(i). An important amendment to this Convention was adopted on 11 July 2003 deleting the exception for paramount interest of the State and replacing it with detailed environmental protection obligations for armed conflicts based on principles of international humanitarian law, but this amendment is not yet in force. See au.int/en/treaties (last visited on 10 September 2013).

the alternative protective regime that comes into play under such exceptional circumstances:

Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat.

The rationale of this provision differs from the one underlying Article 11(4) of the WHC. Whereas the latter seeks to preserve, as much as possible, the endangered site, Article 4(2) of Ramsar admits the loss and simply calls for compensating measures. Thus, the 'urgent national interest' is seen as an overriding consideration. In practice, however, the Secretariat keeps a list (the 'Montreux Record') similar to the List of World Heritage in Danger, and it has intervened in some cases to preserve existing sites as much as possible.⁷¹

11.2.1.3.4 Norm articulation

Even when a treaty continues in operation and the relevant provisions are not subject to derogations, the application of environmental norms during armed conflict must be articulated with that of other norms, particularly those of *jus in bello*. The resulting interactions are potentially complex, but for present purposes they can be analysed from two main perspectives, namely conflicting (i.e. when respecting one applicable norm entails violating another applicable norm) and synergistic (i.e. when both norms can be applied together, one serving to interpret or complete the other).

The ILC addressed the question of norm conflicts in its work on the fragmentation of international law,⁷² providing a useful summary of the relevant practice and the different legal techniques to deal with such conflicts. Strictly speaking, a conflict of norms arises only when two mutually exclusive norms govern the same situation and thus preclude State compliance with both norms. Another type of conflict can arise between authorisations and obligations to the extent that an authorisation entails a permission to do or not to do something, which would conflict with an obligation not to do or to do

⁷¹ In the pending border dispute between Costa Rica and Nicaragua, where Costa Rica argued that Nicaragua was destroying a Ramsar-protected wetland as part of the construction works of a canal, the Ramsar Secretariat sent a mission to evaluate the impact of Nicaragua's actions on the relevant wetland. The ICJ encouraged this intervention by noting, in an order for provisional measures, that the Ramsar Secretariat was to be consulted by Costa Rica in connection with the protection of a wetland located in disputed territory. See ICJ, *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*, Request for the indication of provisional measures, Order of 8 March 2011, para. 86(2).

⁷² 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* (2006) ('Conclusions'). See also the Report of 13 April 2006 (Doc. A/CN.4/L.682) on which the Conclusions are based ('Report').

something. More generally, one may speak of conflict of norms (*conflit de lois*) in connection with the determination of the law applicable to a situation that may be governed by more than one norm, even if the conduct required by the different norms involved are potentially similar. Among the general conflict norms (*lex superior*, *lex specialis* and *lex posterior*) widely recognised in international law, the most relevant for the relations between environmental norms and norms of *jus in bello* is the *lex specialis* principle. In its Advisory Opinions on the *Legality of Nuclear Weapons* and on the *Construction of a Wall in Occupied Palestinian Territory*, the ICJ referred to this principle to assert the priority of application of *jus in bello* norms with respect to human rights norms.⁷³ However, in the *DRC v. Uganda* case, the ICJ did not exclude the concurring application of Article 21 of the African Charter (a human rights provision) together with *jus in bello*.⁷⁴ The latter approach suggests that the *lex specialis* principle may not necessarily exclude the concurrent application of other norms. The question then becomes how precisely the different applicable norms are to be articulated.

The articulation of two or more norms applicable to the same situation may take different forms. If *jus in bello* is deemed to be the governing *lex specialis*, then environmental norms may apply for interpretation purposes or to complement the governing norm addressing aspects not covered by the latter. The first hypothesis is hardly controversial. The need to take into account the prevention principle in assessing the overall legality of the threat or the use of nuclear weapons and, more specifically, the norms regulating the exercise of self-defence or the conduct of hostilities was recognised by the ICJ in its aforementioned Advisory Opinion on the *Legality of Nuclear Weapons*.⁷⁵ Such stance can be seen as an application of the broader rule of systemic integration codified in Article 31(3)(c) of the VCLT according to which the interpreter of a treaty must take into account, together with the context, '[a]ny relevant rules of international law applicable in the relations between the parties'.⁷⁶ The second hypothesis is more difficult. The extent to which environmental norms may be brought in to cover aspects not clearly addressed by a *lex specialis* may be understood as mere interpretation or, alternatively, as a direct application of a norm to a situation for which there is, in point of fact, no *lex specialis*. By way of illustration, even when an action has destroyed a legitimate military target without excessive environmental damage, as permitted by Article 52 of Additional Protocol I, an environmental norm may come into play to distribute the financial burden of rehabilitating the damaged environment. Similarly, the requirement in Article 57(2)(a)(iii) of Additional Protocol I to refrain from launching an attack with excessive collateral damage

⁷³ *Legality of Nuclear Weapons*, *supra* n. 6, para. 25; *Wall Advisory Opinion*, *supra* n. 47, para. 106.

⁷⁴ *DRC v. Uganda*, *supra* n. 44, para. 245.

⁷⁵ *Legality of Nuclear Weapons*, *supra* n. 6, para. 30 read in the context of para. 29.

⁷⁶ This interpretation rule was discussed by the ICJ in *Oil Platforms Case (Islamic Republic of Iran v. United States of America)*, ICJ Reports 2003, p. 161, para. 41.

on civilians or civilian property may entail, if read in the light of the customary environmental obligation to conduct an environmental impact assessment, some formal procedural steps in the planning of military operations. Such articulation is difficult to achieve in the abstract but, as environmental protection becomes more present in other areas of international law, one may expect its impact on general norms of *jus in bello* to increase.

11.2.1.4 Weapons as pollutants

11.2.1.4.1 Overview

When it comes to the methods and means of warfare, the norms and instruments of *jus in bello* target the 'use' of certain weapons that may cause unnecessary suffering or have indiscriminate or excessive effects on civilians, civilian property or the environment. By contrast, the international law of arms control (or 'disarmament') adopts a wider perspective and regulates, for some types of weapons considered as weapons of 'mass destruction',⁷⁷ their entire life cycle, from development to destruction or conversion. The difference in terms of regulatory focus can be illustrated by reference to the two key instruments regulating biological weapons, namely the 1925 Geneva Protocol,⁷⁸ which bans their use, and the 1972 Convention on Biological Weapons,⁷⁹ which bans the remaining aspects of the life-cycle of such weapons (and implicitly also its use).

For present purposes, the main feature to be highlighted is the similarity between this more comprehensive regulatory approach and the approach followed in environmental treaties, such as the Montreal Protocol,⁸⁰ the POP Convention⁸¹ or the Minamata Convention,⁸² which regulate the entire life cycle of certain pollutants (or a significant portion of it). In the following paragraphs, the regimes applicable to the three main weapons of mass destruction (nuclear, biological and chemical weapons) are briefly discussed in order to show the extent to which the third regulatory approach identified earlier in this chapter has found concrete legal expression.

⁷⁷ Although the term 'weapons of mass destruction' was defined in the late 1940s by a United Nations Committee (on the basis of their destructive and indiscriminate effect), in contemporary international law it is used to refer to nuclear, biological and chemical weapons and to contrast these three types of weapons to 'conventional' weapons. See H. A. Strydom, 'Weapons of Mass Destruction', in *Max Planck Encyclopedia of Public International Law*, available at: www.opil.ouplaw.com (last visited on 20 April 2014).

⁷⁸ Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, 17 June 1925, 94 LNTS 65 ('1925 Geneva Protocol').

⁷⁹ Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, 10 April 1972, 1015 UNTS 163 ('BWC').

⁸⁰ Montreal Protocol, *supra* n. 54. On the scope of this treaty, see Chapter 5.

⁸¹ POP Convention, *supra* n. 54. On the scope of this treaty see Chapter 7.

⁸² Minamata Convention on Mercury, 10 October 2013, available at: www.mercuryconvention.org (last visited on 20 April 2014) ('Minamata Convention'). On the scope of this treaty, see Chapter 7.

As we shall see, whereas the first set of instruments to follow this approach concerned biological weapons, the most comprehensive and far-reaching one came twenty years later and targeted chemical weapons. As for nuclear weapons, the deep political opposition of several nuclear States has so far prevented the emergence of a clear ban with respect to their threat or use, although the other phases of their life cycle are highly regulated.

11.2.1.4.2 Biological weapons

Biological (including bacteriological) weapons are devices intended to disperse disease-causing agents (bacteria, viruses or fungi) or toxins to kill or harm humans or the environment.⁸³ Their effect is seldom immediate and, as a result, the military advantage they may provide in the battlefield is less important than the strategic advantage they may give in the longer term as a means to weaken the adversary.⁸⁴ Their environmental effect is potentially very significant because, by their very nature, they entail the release of a virulent pathogen into the environment.

Efforts to control the use of biological weapons can be traced back to at least the 1899 and 1907 Hague Conferences.⁸⁵ The current legal system is based on an old and very concise instrument, the aforementioned 1925 Geneva Protocol, which bans the 'use' in war of 'asphyxiating, poisonous or other gases, and of all analogous liquids materials or devices' and extends this prohibition to 'bacteriological methods of warfare'.⁸⁶ However, the main instrument banning bacteriological weapons is the BWC negotiated under the aegis of the then UN Conference on Disarmament between 1969 and 1972. Pursuant to Article I of the BWC:

Each State Party to this Convention undertakes never in any circumstances to develop, produce, stockpile or otherwise acquire or retain:

1. microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes;
2. weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.

The ban is comprehensive and concerns the full life cycle of biological weapons, including (implicitly) their use. Indeed, at the Fourth Review Conference

⁸³ See D. Svarc, 'Biological Weapons and Warfare', in *Max Planck Encyclopedia of Public International Law* (2011), available at: www.opil.oupilaw.com (last visited on 20 April 2014), para. 1; D. H. Joyner, *International Law and the Proliferation of Weapons of Mass Destruction* (Oxford University Press, 2009), Chapter 2.

⁸⁴ Svarc, *supra* n. 83, para. 3.

⁸⁵ See Hague Declaration (IV, 2) concerning Asphyxiating Gases, 29 July 1899, 187 CTS 453; Hague Convention IV, *supra* n. 36, Regulations, Art. 23(a).

⁸⁶ 1925 Geneva Protocol, *supra* n. 78, preamble, para. 1 and declaration, para. 1.

of the BWC, held in Geneva in 1996, States parties reaffirmed 'that under any circumstances the use, development, production and stockpiling of bacteriological (biological) and toxin weapons is effectively prohibited under Article I of the Convention'.⁸⁷ As for existing stocks of agents or equipment, States parties are required to destroy them or divert them to peaceful purposes⁸⁸ and they are also under the obligation not to transfer to any recipient or give other States or organisations assistance or encouragement for the development of such agents or equipment.⁸⁹ The BWC also contains specific provisions to prevent biological weapons from being acquired by terrorist groups.⁹⁰

The Achilles heel of the regime is the lack of an adequate system of verification and implementation. Although a complaint may be lodged with the UN Security Council (a possibility that has so far not been used),⁹¹ the verification system and, more generally, the institutional dimension of the regime are particularly weak. Although a number of 'confidence building measures' were introduced in 1986 and a small 'Implementation Support Unit' was set up in 2006, other meaningful steps, including a verification protocol, have encountered much resistance mostly from the United States and Russia.⁹² Another problem, which may appear as quite puzzling from a disarmament standpoint but must nevertheless be noted from an environmental perspective, is the impact of destruction or disposal of agents or the decommissioning of equipment and facilities. As noted by a former UN Under-Secretary General for Disarmament Affairs '[t]he supreme irony is that in getting rid of such weapons in the interests of peace and security, we have arguments brought out in the name of environmental protection from the very quarters that created the arms'.⁹³ Article II of the BWC expressly referred to this concern, noting that '[i]n implementing the provisions of this Article all necessary safety precautions shall be observed to protect populations and the environment'. This challenge is also relevant for the other two weapons of mass destruction.

11.2.1.4.3 Chemical weapons

The 1925 Geneva Protocol and the BWC are also relevant for the regulation of chemical weapons but the centre of gravity in this area is provided by the Chemical Weapons Convention ('CWC'), also negotiated under the aegis of the UN Conference on Disarmament and opened for signature in

⁸⁷ Fourth Review Conference, Geneva, 25 November–6 December 1996, Final Declaration, para. 3.

⁸⁸ BWC, *supra* n. 79, Art. II. ⁸⁹ *Ibid.*, Art. III. ⁹⁰ *Ibid.*, Art. IV. ⁹¹ *Ibid.*, Art. VI.

⁹² On this issue see J. Littlewood, 'The Verification Debate in the Biological and Toxin Weapons Convention in 2011' (2010) 3 *Disarmament Forum* 15.

⁹³ J. Dhanapala, 'The Environmental Impacts of Manufacturing, Storing, Deploying and Retiring Weapons', in *Symposium: Arms and the Environment: Preventing the Perils of Disarmament*, National Energy-Environment Law and Energy Policy Institute, The University of Tulsa College of Law Tulsa, Oklahoma, 9 December 1999, available at: www.un.org/disarmament/ (last visited on 20 April 2014).

1993.⁹⁴ Although there is some overlap between the concepts of biological and chemical weapons (as regards toxins produced by living organisms), the latter are characterised as non-living toxic substances. Due to their indiscriminate and potentially large-scale effects, chemical weapons are considered as weapons of mass destruction.

The CWC is both a *jus in bello* and a disarmament/non-proliferation treaty. The fundamental obligation stated in Article 1 is wide-ranging and encompasses (i) use, (ii) development, production, acquisition, stockpiling, retention and transfer, (iii) assistance or encouragement in this regard, and (iv) destruction of existing weapons and facilities, including those abandoned in the territory of another State party. 'Chemical Weapons' and 'Chemical Weapons Production Facilities' are characterised in detail by reference to their purpose (civilian, protective and domestic riot control uses are allowed⁹⁵) and quantities in Article 2. From an environmental perspective, it is noteworthy that the 'Toxic Chemicals' that may qualify as a 'Chemical Weapon' are defined by reference to their 'chemical action on life processes [that] can cause death, temporary incapacitation or permanent harm to humans or animals'. The question of chemicals causing harm to the non-human and non-animal environment is partly dealt with in the preamble to the CWC, which recognises: 'the prohibition, embodied in the pertinent agreements and relevant principles of international law, of the use of herbicides as a method of warfare'. The reference is, among others, to the 1925 Geneva Protocol and the ENMOD Convention, discussed earlier in this chapter, which sets a significant threshold (albeit lower than Additional Protocol I) for its prohibition to apply.

Unlike the BWC, the CWC has a much stronger institutional component, in the form of an Organisation for the Prohibition of Chemical Weapons ('OPCW'),⁹⁶ which is based in The Hague, as well as a sophisticated verification and implementation system. The latter consists mainly of initial and annual declarations by the States parties followed by verification by the OPCW Secretariat,⁹⁷ but also of *ad hoc* inspections in case of suspicion of non-compliance.⁹⁸ Also of note is the sophisticated framework for the destruction of existing chemical weapons.⁹⁹ Much like phase outs in environmental treaties, the CWC contains an 'Annex on Chemicals' with three 'Schedules'

⁹⁴ Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, 13 January 1993, 1974 UNTS 45 ('CWC'). See T. Marauhn, 'Chemical Weapons and Warfare', in *Max Planck Encyclopedia of Public International Law* (2010), available at: www.opil.oupilaw.com (last visited on 20 April 2014); W. Krutzsch, E. Meijer and R. Trapp (eds.), *The Chemical Weapons Convention. A Commentary* (Oxford University Press, 2014).

⁹⁵ CWC, *supra* n. 94, Art. II(9).

⁹⁶ *Ibid.*, Art. VIII. See <http://www.opcw.org> (last visited on 20 April 2014). On the OPCW see R. Trapp, 'The OPCW in Transition: From Stockpile Elimination to Maintaining a World Free of Chemical Weapons' (2012) 1 *Disarmament Forum* 41.

⁹⁷ CWC, *supra* n. 94, Arts. III and VI. ⁹⁸ *Ibid.*, Art. IX(8)–(25).

⁹⁹ *Ibid.*, Art. IV, Annex on Chemicals and Verification Annex.

distinguishing regulated chemicals depending on the extent they can or cannot be used for purposes other than military.¹⁰⁰ Destruction of these chemicals must follow an 'order of destruction', and it had to be completed within ten years from the entry into force of the CWC.¹⁰¹ Extensions were possible but only up to an absolute deadline set for end April 2012.¹⁰² Although much progress has been made in the elimination of stockpiles (as of April 2012, 78 per cent of declared stockpiles had been destroyed), some countries, including the United States and Russia are still in the process of destroying their holdings.¹⁰³ As with the BWC, the CWC expressly required States, when destroying their holdings of regulated weapons, to 'assign the highest priority to ensuring the safety of people and to protecting the environment'.¹⁰⁴

11.2.1.4.4 Nuclear weapons

The body of international norms regulating nuclear materials intended for military purposes is vast and complex, but it is not comprehensive. Despite considerable debate, particularly after the ICJ's Advisory Opinion on the *Legality of Nuclear Weapons* in the 1990s, there is, to date, no global ban on either their use or the other phases of their life cycle (development, production, acquisition, stockpiling, etc.).¹⁰⁵ Thus, whereas one can confidently assert that biological and chemical weapons are banned, such an assertion would be legally inaccurate, or at least very controversial, if made in connection with nuclear weapons. As noted by ICJ:

The pattern until now has been for weapons of mass destruction to be declared illegal by specific instruments . . . In the last two decades, a great many negotiations have been conducted regarding nuclear weapons; they have not resulted in a treaty of general prohibition of the same kind as for bacteriological and chemical weapons.¹⁰⁶

¹⁰⁰ Schedule I includes chemicals such as sarin or sulphur and nitrogen mustards, which have little or no use other than military. Schedule II includes chemicals such as amiton, a nerve agent, which is not produced in large commercial quantities for purposes permitted under the convention. Schedule III includes chemicals such as hydrogen cyanide, which is produced in large commercial quantities as a precursor to obtain other substances used in gold and silver mining.

¹⁰¹ *Ibid.*, Art. IV(6) and Verification Annex, part IV(A), C.15–19.

¹⁰² CWC, *supra* n. 94, Verification Annex, part IV(A), C.24–28 (the absolute limit is set in paragraph 25 by reference to 15 years since entry into force of the CWC, which did so on 29 April 1997).

¹⁰³ See Report of the OPCW on the Implementation of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, 4 December 2013, C-18/4, paras. 2–3.

¹⁰⁴ CWC, *supra* n. 94, Art. IV(10).

¹⁰⁵ *Legality of Nuclear Weapons*, *supra* n. 6, para. 53–74 (concluding to the absence of a specific treaty or customary 'norm' generally banning the use of nuclear weapons). See S. Kadelbach, 'Nuclear Weapons and Warfare', in *Max Planck Encyclopedia of Public International Law* (2009), available at: www.opil.ouplaw.com (visited on 20 April 2014); Nystuen, *et al.*, *supra* n. 48.

¹⁰⁶ *Legality of Nuclear Weapons*, *supra* n. 6, paras. 57–8.

This is of course unintuitive, as nuclear weapons are by far the most dangerous weapons of mass destruction and certainly those with the highest impact on the natural environment. Yet, international law is not always reasonable or, more precisely, it sometimes follows peculiar but politically powerful reasons. The purpose of this section is not to re-open the debate on the legality of nuclear weapons but only to illustrate how significant aspects of the life cycle of nuclear weapons are indeed regulated which, in turn, provides some measure of protection to the environment.

Aside from the regulation of nuclear energy, discussed in Chapter 7, several international instruments specifically address portions of the life cycle of nuclear weapons. In its aforementioned Advisory Opinion, the ICJ provided an overview of treaties regulating (i) the acquisition, manufacturing or possession of nuclear weapons, (ii) their deployment, (iii) the testing of such weapons, and (iv) their use.¹⁰⁷ None of these treaties is geographically or substantively comprehensive. Thus, the specific commitments regarding the prohibition of use apply in some specific regions (Latin America; the South Pacific)¹⁰⁸ or under some circumstances (e.g. between nuclear-weapons and non-nuclear-weapons States parties to the NPT and subject to exceptions).¹⁰⁹ Similarly, the ban on the acquisition, manufacturing or possession of nuclear weapons only applies to certain countries (e.g. Germany¹¹⁰) or categories of countries (e.g. non-nuclear-weapons States under the NPT¹¹¹). As for the regulation of deployment and testing, it has a more explicit environmental protection impact, for example, through the denuclearisation of common areas such as Antarctica¹¹² or the

¹⁰⁷ *Ibid.*, paras. 58–63.

¹⁰⁸ See for Latin America: Treaty for the Prohibition of Nuclear Weapons in Latin America, 14 February 1967, 634 UNTS 281 ('Treaty of Tlatelco'), Art. 1; Additional Protocol I to the Treaty for the Prohibition of Nuclear Weapons in Latin America, 14 February 1967, 634 UNTS 360 (opening the treaty to non Latin-American countries with territories in the covered area); Additional Protocol II to the Treaty for the Prohibition of Nuclear Weapons in Latin America, 14 February 1967, 634 UNTS 364 (under which the five NPT nuclear-weapons States commit to respect the denuclearisation of the covered area). For the South Pacific: South Pacific Nuclear Free Zone Treaty, 6 August 1985, 1445 UNTS 177 ('Treaty of Rarotonga'), Art. 3; Protocol 2 to the South Pacific Nuclear Free Zone Treaty, 1 December 1986, 1971 UNTS 475, Art. 1 (ratified by four of the five NPT nuclear-weapons States). For an overview of these and other areas see S. Szurek, 'De Rarotonga à Bangkok et Pelindaba: Note sur les traités constitutifs de nouvelles zones exemptes d'armes nucléaires' (1996) 42 *Annuaire français de droit international* 164.

¹⁰⁹ See Treaty on the Non-Proliferation of Nuclear Weapons, 1 July 1968, 729 UNTS 161 ('NPT'). In 1995, the NPT was extended and the five NPT nuclear-weapons States made unilateral declarations undertaking not to use nuclear weapons against non-nuclear States parties to the NPT, with some narrow exceptions.

¹¹⁰ See Treaty on the Final Settlement with Respect to Germany, 12 September 1990, 1696 UNTS 115, Art. 3(1).

¹¹¹ NPT, *supra* n. 109, Art. 2.

¹¹² See Antarctic Treaty, 1 December 1959, 402 UNTS 71, Arts. I and V; Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof, 11 February 1971, 955 UNTS 115, Art. I.

seabed,¹¹³ or the prohibition of atmospheric and under water testing.¹¹⁴ Overall, as the Court noted in 1996 ‘these treaties could therefore be seen as foreshadowing a future general prohibition of the use of such weapons’. Yet, it immediately added that ‘they do not constitute such a prohibition by themselves’.¹¹⁵

In the period since 1996, other relevant treaties have been concluded, including one setting a ‘nuclear weapon free’ zone in Central Asia.¹¹⁶ Although such zones may be expanding geographically, nuclear powers staunchly oppose the principle of a comprehensive ban and this is not likely to change in the near future. As a result, environmental protection may be best served by focusing on the regulation of deployment, testing and non-proliferation broadly understood, encompassing (i) not only the prohibition of extension of the nuclear States ‘club’ but also (ii) the reduction, within the latter, of the stocks of nuclear weapons¹¹⁷ as well as, potentially, (iii) a ban on the production of the basic pollutant, i.e. fissile materials for nuclear weapons or other military devices.¹¹⁸

11.2.1.5 Current codification efforts

As suggested by the foregoing sections on the relevance of peacetime environmental treaties and the regulation of weapons of mass destruction, there is a clear case for approaching the protection of the environment in armed conflict not only through the lens of norms of *jus in bello* but also by taking into account a broader set of norms that intervene before, during and after the hostilities. Over time, several codification efforts have been undertaken to address the impact of armed conflict on the environment¹¹⁹ or on related topics, such as the effect of armed conflict on treaties.¹²⁰

¹¹³ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, 27 January 1967, 610 UNTS 205 (‘Outer Space Treaty’), preamble and Art. IV.

¹¹⁴ See among others the Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and under Water, 5 August 1963, 480 UNTS 43 (‘PNTB’).

¹¹⁵ *Legality of Nuclear Weapons*, *supra* n. 6, para. 62.

¹¹⁶ Treaty on a Nuclear-Weapon-Free Zone in Central Asia, 8 September 2006, 2212 UNTS 257 (‘Treaty of Semipalatinsk’), followed by a Protocol signed by the five NPT nuclear-weapons States on 6 May 2014.

¹¹⁷ There have been significant efforts to accomplish such reduction, particularly between the United States and the USSR (now Russia). For a concise overview see Kadelbach, *supra* n. 105, paras. 23–7.

¹¹⁸ On the efforts and implications of developing a ‘Fissile Material Cut-off Treaty’ see United Nations Institute for Disarmament Research, *A Fissile Material Cut-off Treaty. Understanding the Critical Issues* (Geneva: UNIDIR, 2010).

¹¹⁹ International Committee of the Red Cross (‘ICRC’), *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict*, 1993, available at: www.icrc.org (last visited on 20 April 2014). The UN General Assembly encouraged States to incorporate these guidelines into their military manuals. See UN Doc. A/RES/49/50, 17 February 1995, para. 11.

¹²⁰ 2011 ILC Draft, *supra* n. 53.

In 2013, the ILC undertook work on the topic 'Protection of the Environment in Relation to Armed Conflict'. The expression 'in relation to' was specifically chosen in order to broaden the spectrum of norms to be considered. The Special Rapporteur, Marie Jacobsson from Sweden, has framed the work in temporal terms distinguishing 'three temporal phases: before, during and after an armed conflict (phase I, phase II and phase III, respectively)'.¹²¹ Interestingly, the Rapporteur intends to focus on phases I and III, which have received less attention in codification efforts, and to target non-international armed conflicts in her work on phase II. At the same time, the Rapporteur has expressed its intention not to address questions such as environment-driven conflict, the protection of cultural property, the regulation of weapons and environment-driven displacement.¹²²

The work on this topic is expected to result in 'conclusions' or 'guidelines' rather than on a draft leading to a treaty. Such conclusions will be most useful to clarify the operation of a wide corpus of norms addressing the impact of conflict on environmental protection.

11.2.2 Environmental dimensions of recourse to war

11.2.2.1 Overview

The body of norms regulating the recourse to force in international law may also be relevant for the protection of the natural environment. This topic has been addressed from three main angles.

One angle concerns the impact of environmental protection on the rules circumscribing the two exceptions to the prohibition of the use of force, i.e. self-defence and enforcement action under Chapter VII of the United Nations Charter. From a legal standpoint, this amounts to assessing the extent to which environmental protection is taken into account by these norms.

The second angle relates to the legal consequences of violating *jus ad bellum* with respect to the environmental damage caused during armed conflict. This question arose in connection with the UN Security Council's Resolution 687 (1991) condemning the environmental damage caused by Iraq on the territory of Kuwait.¹²³

The third angle is broader, encompassing the new types of security threats that may arise as a result of environmental degradation. Properly understood, the questions raised go well beyond the norms of *jus ad bellum* and call for more general discussion. For this reason, only the first two angles are discussed in this section. The latter is discussed in some more detail in Section 11.3 of this chapter.

¹²¹ Preliminary Report on the Protection of the Environment in Relation to Armed Conflicts. Submitted by Marie G. Jacobsson, Special Rapporteur, 30 May 2014, UN Doc. A/CN.4/674 ('2014 Preliminary Report'), para. 58.

¹²² *Ibid.*, paras. 64–7.

¹²³ UN Security Council Resolution 687 (1991), 8 April 1991, UN Doc. S/RES/687 (1991).