

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

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Abstract

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

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

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

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Introduction

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

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

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

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

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

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

recognize more specialized “rights of nature”,⁵ which engage a stronger, intrinsic value⁶ of the natural world – that is, the value that nature has in and of itself, for itself.⁷ Thus, intrinsic value suggests that organisms have an “inherent worth” of their own, without recourse to people as the ones ascribing that value.⁸ At the same time, environmental protections cannot revert to ideas of “fortress conservation” protecting “pristine wilderness” from humans, often by forced evictions and other human rights violations in the name of conservation. People are part of nature, not separate from it, and so, building on the notion of biocultural rights,⁹ society has to ensure that it views nature and people as part of one whole. The triple crisis, and climate change in particular, has therefore caused fundamental changes in the relationship between people and nature, including through how nature is valued and what is perceived to constitute “damage” to the environment.

By contrast, in armed conflicts, the environment often seems to be considered by warring parties only as a secondary concern. Deliberate targeting of infrastructure, energy facilities and industry in military operations releases hazardous substances and toxic chemicals, which harms air, soil, water sources and marine life.¹⁰ The wartime environment is often also viewed as a “tool” to be manipulated and used to a party’s advantage, helping to determine where and when to attack in order to aid military operations or to impede those of the enemy. Such wilful environmentally destructive motivations have been demonstrated, for example, in the poisoning of lakes and rivers¹¹ and in the attack on Ukraine’s occupied Kakhovka Dam in June 2023.¹² Warfare also causes several indirect environmental effects through institutional collapse and population displacement. Meanwhile, the commodification of the environment as “property” leads to the unsustainable and often illegal exploitation of “natural resources”, frequently playing a role in the financing and sustaining of

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The values of nature in the laws of armed conflict

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

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

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

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

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

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

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

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

Starting with the aspects of IHL that are more straightforward to classify, several IHL provisions demonstrate a clear anthropocentric approach to environmental protection in wartime by emphasizing the environment as being essential for ensuring the survival of the population. Such anthropocentric approaches emphasize very explicitly and strongly the “human use value” or utilitarian worth of environmental “resources” for the benefit of people. One example of this is the rule prohibiting the destruction of crops and livestock used for civilian sustenance;³⁰ other rules prohibit attacking or destroying dam walls, for example, if doing so would likely cause flooding and consequent severe civilian casualties,³¹ while others prohibit pillage³² and, during occupation, the

24 ILC, *Comments and Observations Received from Governments, International Organizations and Others*, UN Doc. A/CN.4/749, 17 January 2022, Written Statement of Germany on Draft Principle 12, p. 65.

25 *Ibid.*

26 ICRC Guidelines, above note 16, paras 19–20.

27 *Ibid.*, para. 19.

28 *Ibid.*, para. 19.

29 See IPBES Values Assessment, above note 1, p. 32.

30 For instance, IHL provides special protection for object indispensable to the civilian population: AP I, Art. 54; AP II, Art. 14.

31 AP I, Art. 56; AP II, Art. 15.

32 Hague Convention (IV) Respecting the Laws and Customs of War on Land and Its Annex: Regulations Respecting the Laws and Customs of War on Land, UKTS (1910) 9, 18 October 1907 (entered into force 26 January 1910), Arts 28, 47.

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

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

33 *Ibid.*, Art. 55.

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

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

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

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

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

39 AP I, Art. 55(1).

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

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

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

Most controversial for several States is the recognition that Article 35(3) creates an absolute ceiling of environmental damage,⁴³ notably prohibiting means and methods of warfare likely to breach the threefold threshold of environmental harm. This prohibition continues even when the environment is itself a military objective and even when an attack would remain proportionate⁴⁴ to the anticipated military advantage.⁴⁵ The inclusion of a ceiling of harm deepens the value placed on the environment, but the trade-off is, of course, the colossal height at which that ceiling has been set.

The foundational rules of distinction,⁴⁶ proportionality⁴⁷ and precaution⁴⁸ have clearly evolved a “greened” dimension since the 1970s with States applying IHL environmental protections more broadly,⁴⁹ including recognizing the environment as a *prima facie* civilian object.⁵⁰ These provisions have proven invaluable in affording protection to the environment in armed conflict, especially as Articles 35(3) and 55 have yet to live up to expectations, their application dogged as it is by their very high threshold of harm. Yet, there are also concerns that the proportionality rule often offers limited environmental protection even when relatively low-level military advantages are at stake, such as attacks on industrial facilities. In light of this latter concern, it is worth posing the question of whether States are sufficiently considering any environmental values, whether instrumental or intrinsic, in their calculations. All of these developments in the “greening” of the laws, therefore, show that State practice and *opinio juris* have not stood still, with several initiatives over the years seeking to update and clarify IHL in relation to wartime environmental protection. Most recently, reflecting on developments in international law and State practice, the ICRC Guidelines⁵¹ and the PERAC Principles⁵² have been especially valuable and comprehensive. The PERAC Principles, in particular, drew extensive State engagement and comments, although they do not specifically elaborate any underpinning environmental values.

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

43 M. N. Schmitt, above note 23, p. 90.

44 For the concept of proportionality, see AP I, Art. 51(5)(b), which prohibits damage to civilian objects that exceeds the anticipated military advantage to be gained from the attack.

45 M. Bothe, K. J. Partsch and W. A. Solf, above note 37; W. D. Verwey, above note 34, p. 11; M. N. Schmitt, above note 23, p. 90.

46 AP I, Art. 48.

47 *Ibid.*, Art. 51(5)(b); ICRC Customary Law Study, above note 22, Rule 14.

48 AP I, Art. 57.

49 Note the State practice evidenced in the commentary to PERAC Principles 13 and 14 (PERAC Principles, above note 17) and underpinning customary IHL Rule 43 (ICRC Customary Law Study, above note 22).

50 Michael Bothe, “The Protection of the Environment in Times of Armed Conflict: Legal Rules, Uncertainty, Deficiencies and Public Developments”, *German Yearbook of International Law*, Vol. 34, 1991, p. 55; K. Hulme, above note 37.

51 ICRC Guidelines, above note 16.

52 PERAC Principles, above note 17.

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

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

The changing values of the environment – theoretically and legally

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

Values of the non-human world

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

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

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

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

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

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

The pendulum has been shifting, though, towards greater prominence of the intrinsic value of nature. It has been forty years since environmental law expressly recognized the intrinsic value of nature, first in the 1979 Bern Convention on the Conservation of European Wildlife and Natural Habitats⁵⁸ and, later, in the Convention on Biological Diversity (CBD),⁵⁹ both of which ensure protections for habitats and species, among other things, through a protected areas mechanism. But more recent examinations of the values of nature, including by the CBD's own Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), still say that too narrow a set of values is being prioritized.⁶⁰ Having catalogued more than fifty methods of valuing nature, IPBES perceives that the biodiversity crisis is "tightly linked" to the ways in which nature has been valued.⁶¹ Emphasizing the need to incorporate diverse perspectives, such as local and indigenous cultural and spiritual knowledge, into actions, IPBES suggests the need to foster more holistic and inclusive approaches to conservation and sustainable use of biodiversity and ecosystems.⁶² Intrinsic approaches to nature conservation continue to emphasize the importance of viable habitats for species and limiting harmful human interferences, while now also ensuring the continuity of biocultural rights as a positive measure for both local and indigenous communities and nature itself. These values will, certainly, be particularly pertinent in the next few years as States look to deliver on the Global Biodiversity Framework promise to protect 30% of the planet by 2030.⁶³

57 I. J. Davidson-Hunt *et al.*, above note 21, p. 51.

58 Convention on the Conservation of European Wildlife and Natural Habitats, UKTS 56 (1982), 19 September 1979 (entered into force 1 June 1982) (Bern Convention), preambular para. 3.

59 CBD, above note 55, preambular para. 1.

60 IPBES Values Assessment, above note 1, Key Messages 1 and 2. IPBES is an intergovernmental body established by States in 2012 that assesses the state of biodiversity and ecosystem services, provides policy recommendations and enhances the integration of scientific knowledge into decision-making processes. See the IPBES website, available at: www.ipbes.net/about.

61 IPBES Values Assessment, above note 1, Key Message 1.

62 *Ibid.*

63 Kunming-Montreal Global Biodiversity Framework, Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity, CBD/COP/DEC/15/4, 19 December 2022.

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

Biocultural rights

In light of the devastating climate change impacts experienced globally in the last few decades,⁶⁴ more emphasis within human rights law has been placed on effectively safeguarding the environment. In this context, the recognition of humanity's interdependence with nature has significantly broadened the scope of human rights law with the emergence of efforts to "green" human rights. In addition to recognizing the human right to a healthy environment,⁶⁵ the notion of biocultural rights has evolved as a response aimed at correcting or rebalancing humanity's relationship with nature. The IPBES Values Assessment also reflects this biocultural rights⁶⁶ perspective, which moves beyond the prior perception of humans as merely exploiting and exerting control over the environment, instead positioning them as integral components of the natural world.⁶⁷ This perspective emphasizes the imperative of fostering harmonious coexistence and recognizes the intricate symbiosis between culture, biology and the environment. In doing so, it underscores the mutual enrichment that occurs when human societies recognize and honour the interconnectedness between their cultural heritage, biological diversity and the ecosystems they inhabit.

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

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

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

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

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

68 S. K. Bavikatte, above note 66.

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

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

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

Rights of nature

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

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

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

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

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

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

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

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

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

sustainable practices, clean-up plans, and enhanced monitoring of environmental conditions.⁷⁷ Thus, the recognition of rights of nature has strengthened the concept of biocultural rights, linking the protection of ecosystems with the cultural identity and well-being of indigenous communities. For instance, the Colombian Constitutional Court made explicit references to biocultural rights in the *Atrato River* case, ensuring the guardianship of indigenous peoples to care for the river.⁷⁸ In short, the rights of nature approach asserts that ecosystems, rivers, forests and other natural entities have inherent rights to exist, flourish⁷⁹ and evolve, and seeks to protect the intrinsic value of the environment beyond its human-use values.

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

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

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

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

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

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

81 P. Wesche, above note 76.

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

Enhancing environmental protection during armed conflict

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

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

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

83 M. N. Schmitt, above note 23, p. 98.

84 Joan E. Schaffner, "Value, Wild Animals and Law", in Werner Scholtz (ed.), *Animal Welfare and International Environmental Law*, Edward Elgar, Cheltenham, 2019, p. 23.

85 See, for example, CBD, above note 55, Art. 8; Bern Convention, above note 58, Art. 4.

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

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

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

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

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

88 Note NATO’s attack on telecom towers in Serbian protected areas, with cluster bombs, in 1999: UNEP and UNCHS, above note 10, pp. 64–66.

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

90 A. Plumptre, above note 87.

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

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

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

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

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

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

95 B. Sjöstedt, above note 94.

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

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

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

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

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

risk” sites during armed conflict in the World Heritage Convention¹⁰¹ and the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention),¹⁰² for example, more treaty bodies might create similar review and support mechanisms, and as a matter of urgency. It is clearly important, however, for any wartime obligations to be very precise and concrete and agreed by the parties, and for such discussions to include military voices to ensure “buy-in” and practical input and support, especially as regards areas of active hostilities.

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

A concrete way through which to achieve these goals, and to ensure military input, is contained in the ILC’s twin PERAC Principles 4 and 18.¹⁰⁸ Although they still leave room for further clarification, these Principles create a workable approach for “protected environmental zone” agreements.¹⁰⁹ Based on the demilitarized

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

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

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

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

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

106 AP I, Arts 57, 58.

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

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

109 K. Hulme, above note 96.

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

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

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

110 PERAC Principles, above note 17, Principle 18.

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

112 *Ibid.*

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

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

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

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

115 IUCN, above note 87, pp. 51–52.

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

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

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

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

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

Enhancing post-conflict environmental reparation and restoration

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

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

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

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

122 PERAC Principles, above note 17.

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

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

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

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

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

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

129 *Ibid.*

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

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

130 *Ibid.*, para. 348.

131 *Ibid.*, para. 363.

132 L. Kong and Y. Zhao, above note 127, pp. 16–19.

133 *Ibid.*

134 The UNCC was established by the Security Council as a temporary institution to review and grant claims for which Iraq was liable in accordance with UNSC Res. 687, 3 April 1991.

135 For more detailed analysis, see Cymie Payne and Peter Sands, *Gulf War Reparation and the UN Compensation Commission*, Oxford University Press, Oxford, 2011.

136 *Ibid.*

137 UNCC, *Report and Recommendations made by the Panel of Commissioners Concerning the First Installments of F4 Claims*, UN Doc. S/AC.26/2001/16, 22 June 2001. See also UNSC Res. 687, 8 April 1991.

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

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

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

139 *Ibid.*

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

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

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

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

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

142 PERAC Principles, above note 17, Principle 25.

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

144 C. Louma, above note 116.

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

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

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

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

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

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

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

149 *Ibid.*

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

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

152 *Ibid.*

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

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

155 E. Cusato, above note 153.

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

New practical and technological tools?

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

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

157 I. Ariza-Buitrago and L. Gómez-Betancur, above note 143.

158 Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, 2161 UNTS 447, 25 June 1998 (entered into force 30 October 2001); Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, 3397 UNTS CN195, 4 March 2018 (entered into force 22 April 2021); UN Declaration on the Rights of Indigenous Peoples, UNGA Res. 61/295, 2 October 2007.

159 PERAC Principles, above note 17, Principle 9.

160 CBD, above note 55, Art. 10(d).

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

162 Maja Zehfuss, "Targeting: Precision and the Production of Ethics", *European Journal of International Relations*, Vol. 17, No. 3, 2011.

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

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

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

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

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

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

166 *Ibid.*, p. 3.

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

168 *Ibid.*

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

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

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

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

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

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

Conclusions

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

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

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

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

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