



INTEGRATING CLIMATE CHANGE ADAPTATION INTO INTERNATIONAL HUMANITARIAN LAW: ADDRESSING ENVIRONMENTAL IMPACT IN CONFLICT ZONES

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Abstract

The intersection of International Humanitarian Law (IHL) and climate change is an emerging area of legal concern. As climate change exacerbates environmental degradation and resource scarcity, its impact on conflict zones becomes increasingly apparent. IHL, traditionally focused on protecting human life, dignity, and the environment during armed conflict, must evolve to address the complex environmental challenges posed by climate change. This paper explores the existing IHL framework for environmental protection, primarily through the lens of Additional Protocol I to the Geneva Conventions, which includes provisions such as Article 35(3) and Article 55, prohibiting the use of warfare methods that cause long-term, severe damage to the environment. While these provisions provide some protection, they are limited in addressing the indirect and cumulative effects of climate change. The paper highlights the challenges of applying IHL to the environmental impacts of modern warfare, such as resource-driven conflicts, migration, and climate-induced displacement. It also proposes legal reforms to strengthen IHL's responsiveness to climate change, including incorporating explicit references to climate-related environmental harm, enhancing enforcement mechanisms, and establishing new legal instruments to address environmental damage exacerbated by warfare. Ultimately, the paper argues for a more integrated approach to climate change and IHL, ensuring better protection for vulnerable populations and ecosystems in conflict zones. The paper concludes by emphasizing the need for international cooperation to build resilience and reduce environmental damage during and after conflict.

Keywords: IHL, Climate change, Environmental protection, Armed Conflict, Legal Reform

1. Introduction

International Humanitarian Law (IHL), designed to govern the conduct of armed conflict and ensure humanitarian protection during times of war,¹ primarily focuses on safeguarding human dignity, preventing unnecessary suffering, and ensuring the humane treatment of those not participating in hostilities.² The Geneva Conventions (1949) and their Additional Protocols (1977) outline the protections for civilians, prisoners of war, and combatants who are *hors de combat*.³ However, the scope of IHL has not traditionally addressed the environmental impact of conflict, especially in the context of climate change, which increasingly poses threats to both humanitarian and environmental security. As climate change accelerates, its effects are becoming evident across the globe, with more frequent natural disasters, rising sea levels, desertification, and resource scarcity. In conflict zones, these environmental challenges exacerbate the vulnerabilities of already marginalized populations.⁴ For instance, climate-induced displacement is becoming a major concern in conflict regions such as the Sahel, where desertification and droughts are pushing people into already overstretched areas.⁵

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¹J. Meurant, "Inter Arma caritas: Evolution and Nature of International Humanitarian Law" (1987) 24 (3) Journal of Peace Research, Special Issue on Humanitarian Law of Armed Conflict p. 239.

² Geneva Conventions 1949, common Article 3; International Committee of the Red Cross, (2004). International Humanitarian Law: Answering the Challenges of Contemporary Armed Conflicts. (Geneva: International Committee of the Red Cross, 2004), 45-60.

³ International Committee of the Red Cross, International Humanitarian Law, 45-60.

⁴ United Nations Environment Programme (UNEP). (2009). From Conflict to Peacebuilding: The Role of Natural Resources and the Environment. Nairobi: UNEP, 20-35.

⁵ R. McLeman, Climate Change and Human Migration: From the Margins to the Mainstream (Cambridge: Cambridge University Press, 2014), 72-90.



Furthermore, the damage to natural resources, such as water, arable land, and forests, caused by armed conflict can prolong suffering and impede post-conflict recovery.⁶ The challenge presented by climate change in conflict zones is not merely environmental but extends to humanitarian crises, where resource scarcity and displacement often fuel violent conflict.

Certain International treaties,⁷ particularly Additional Protocol I to the Geneva Conventions, outline protections for the environment during armed conflict. Specifically, Article 35(3) and Article 55 prohibit methods of warfare that may cause widespread, long-term, and severe damage to the environment. The relevance of IHL in this context lies in its responsibility to regulate the means and methods of warfare to prevent unnecessary suffering and harm to civilian populations and their environments. However, the above provisions are limited in their ability to address the broader, long-term consequences of climate change that extend beyond the direct effects of armed conflict.⁸ As Borrero⁹ argues, current IHL provisions provide some protection but are inadequate for addressing the indirect, cumulative environmental impacts that result from prolonged conflicts and climate change effects, such as migration and resource depletion. Further, Sands¹⁰ highlights that while IHL focuses on the immediate consequences of warfare, it does not fully engage with climate change as an exacerbating factor for environmental damage in conflict zones.² As Sachs¹¹ notes, climate change and armed conflict are increasingly interconnected, with the environmental degradation resulting from war exacerbating the effects of climate change and vice versa. Thus, the integration of climate change adaptation into IHL is essential to address this growing concern, ensuring that future legal frameworks are sufficiently robust to protect both human lives and the natural environment in conflict settings. Hence, the purpose of this paper is to critically evaluate the existing provisions of IHL, assess their limitations in addressing the environmental impacts of climate change, and propose reforms that could better integrate environmental considerations into conflict law. These proposals are necessary for IHL to remain relevant and effective in the face of new challenges presented by climate change.

2. The Legal Framework: International Humanitarian Law and Environmental Protection

International Humanitarian Law (IHL) has developed to address the humanitarian consequences of armed conflict.¹² However, with the increasing impacts of climate change and environmental degradation, there is growing recognition that IHL needs to better account for environmental protection in conflict zones. This section provides an overview of the relevant IHL provisions related to environmental protection during armed conflict, particularly under Additional Protocol I of the Geneva Conventions, and discusses how these provisions can be enhanced to address the challenges posed by climate change.

IHL, specifically Additional Protocol I to the Geneva Conventions, contains several provisions designed to protect the environment during armed conflict. For example, Article 35(3) prohibits means of warfare that would cause widespread, long-term, and severe damage to the natural environment. This reflects the growing recognition that environmental harm caused by armed conflict has long-lasting consequences, affecting not just the immediate battlefield, but the post-conflict recovery of affected populations.¹³ Similarly, Article 55 requires that parties to a conflict take precautions to avoid the widespread destruction of the environment.

⁶ J D Sachs, *The Age of Sustainable Development*, (New York: Columbia University Press, 2015).

⁷ Protocol Additional to the Geneva Conventions 1949 and Relating to the Protection of Victims of International Armed Conflict, 1977 (herein after referred to as Protocol I), Articles 35(3), 55 & 56.

⁸ M. Borrero, *Environmental Protection in International Law: The Role of International Humanitarian Law*, (Oxford: Oxford University Press, 2010), 55-75.

⁹ *Ibid*, 85-100.

¹⁰ P Sands, *Principles of International Environmental Law* (Cambridge University Press 2004) 312-330.

¹¹ JD Sachs, *The Age of Sustainable Development* (Columbia University Press 2015) 101-120.

¹² A. Alexander, "A Short History of International Humanitarian Law" (2015) 26 (1), *European Journal of International Humanitarian Law*, 111.

¹³ P. Sands, *Principles of International Environmental Law* (Cambridge: Cambridge University Press 2004), 320-322.



Article 55 further underscores the need for precautionary measures to protect the environment, stating that care must be taken during warfare to avoid damage that could have widespread, long-term, and severe effects.

“Care shall be taken in warfare to protect the natural environment and to avoid damage that may have widespread, long-term, and severe effects.”

These protections, while significant, do not fully address the long-term environmental effects of climate change, especially when conflict exacerbates pre-existing environmental degradation.¹⁴

Article 35(3) of Protocol I provides: “It is prohibited to employ methods or means of warfare which are intended or may be expected to cause widespread, long-term and severe damage to the natural environment.” Thus the provision explicitly prohibits the use of weapons or methods of warfare that result in widespread, long-term, and severe damage to the natural environment, establishing an international norm that seeks to minimize environmental harm during warfare.

The provisions in Protocol I serve as a foundation for environmental protection in wartime, though their application remains limited. For instance, the provisions apply during international armed conflicts but may not address the cumulative and long-term consequences of climate change induced by prolonged conflicts. While this provision was a landmark in IHL, Borrero¹⁵ notes that it remains limited in its applicability to modern conflicts, where environmental destruction is often indirect and cumulative, exacerbated by climate change. Hence, these gaps in the law can leave the environment vulnerable, especially in the context of climate change.¹⁶

3. Climate Change as an Emerging Challenge

Climate change poses a growing threat to global security, with the IPCC (Intergovernmental Panel on Climate Change) predicting that resource scarcity, such as water and food shortages, will exacerbate tensions in already fragile regions, leading to heightened instability. The scarcity of these resources will likely lead to climate-induced migration, which can further fuel conflict as large populations of displaced persons move into areas where resources are already limited. As Sachs¹⁷ contends, the dual threat of climate change and conflict places tremendous pressure on human security, especially in vulnerable regions. For instance, in regions like the Sahel, the resource-based conflict has been intensified by the impacts of climate change. The degradation of land and water sources has driven local communities to conflict over diminishing resources.¹⁸ Sands notes that in such contexts, climate-induced environmental damage often becomes a significant driver of armed violence.¹⁹

Besides, conflict exacerbated by environmental factors such as drought, desertification, and flooding is becoming more frequent.²⁰ Sands argues that climate change-induced displacement is a significant driver of conflict, especially when populations migrate to regions with scarce resources, further straining already limited natural assets and infrastructure.²¹ As Borrero explains, climate-induced desertification and the reduction of arable land are driving local populations to compete for the remaining fertile land, which fuels instability and armed conflict. Similarly, in Syria, droughts exacerbated by climate change have been linked to widespread displacement, contributing to the breakdown of socio-political stability and the onset of civil war.²²

These are serious challenges that require a strong and effective legal framework to address same.

¹⁴ Borrero, 110-115

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ J. D. Sachs, *The Age of Sustainable Development* (Columbia University Press 2015), 110-113.

¹⁸ ICRC, “Mali-Niger: Climate Change and Conflict make an Explosive mix in the Sahel,” 22 January 2019, <https://www.icrc.org>, accessed 5 April 2025.

¹⁹ P. Sands, *Principles of International Environmental Law* (Cambridge University Press 2004), 340-343.

²⁰ UN IHE - Institute for Water Education, “Drought, Floods contribute to Conflict Risk in several Countries,” <https://www.un-ihe.org> 2 May 2023, accessed 5 April 2025.

²¹ Ibid, 348-350.

²² M. Borrero, *Environmental Protection in International Law: The Role of International Humanitarian Law* (Oxford University Press 2010) 134-140.



4. Gaps in IHL's Response to Climate Change

Although Protocol I²³ and other international legal instruments such as the Convention on Biological Diversity (CBD) and the Paris Agreement on climate change seek to protect the environment, but they do not directly address the relationship between climate change and conflict. The IHL framework does need to be more integrated with these global environmental agreements to provide comprehensive protection in conflict zones.²⁴ In offering some environmental protections, its provisions remain limited in their scope and enforcement.²⁵ IHL, in its current form, is primarily focused on direct, immediate environmental harm caused by armed conflict. However, as Sands notes, this focus is insufficient in addressing the cumulative and long-term environmental impacts resulting from climate change, which may become more pronounced long after a conflict ends. This gap in IHL makes it challenging to fully protect the environment in the context of climate-induced conflict.²⁶

Borrero²⁷ highlights that IHL provisions, while protective, do not account for the indirect effects of warfare, such as pollution, loss of biodiversity, or the long-term destruction of ecosystems that continue long after the conflict ends. Climate change is exacerbating these issues, meaning IHL must evolve to address the broader, more complex effects of warfare on the environment.⁶ O'Neill & O'Neill observe that the broader obligations under Article 55 to protect the environment during conflict are insufficient in addressing climate-related vulnerabilities and recommends legal reforms.

On the other hand, Bassiouni²⁸ highlights the limitations of Protocol I in addressing climate-induced environmental damage, advocating for expanded legal measures to address the evolving nature of conflict and environmental degradation. Harris²⁹ argues for the need to incorporate climate change considerations into IHL, discussing the gaps in current legal provisions regarding indirect environmental harm during and after armed conflict. This gap calls for the development of new mechanisms and provisions within IHL to address these complex challenges.

5. Proposals for Reforming IHL to Address Climate Change

Given the legal gaps, this study proposes a legal reform to address the complex interaction between climate change and armed conflict. The reform should focus on incorporating climate change into IHL's existing framework so as to ensure adequate protection for the environment. The reform should primarily focus on the amendment of the Additional Protocol I to embody provisions specific to climate change and other forms of environmental harm extending even beyond post-war times.

6. Conclusion

The interplay between climate change and conflict zones represents an emerging challenge that international law, particularly International Humanitarian Law (IHL), is not fully equipped to address. This work has highlighted the urgent need to integrate climate change adaptation measures into IHL to mitigate the environmental impacts of armed conflict. As the planet continues to experience significant shifts in weather patterns, resource scarcity, and environmental degradation, the consequences of these changes are magnified in conflict zones where infrastructure is fragile, and governance structures are often weakened. This intersection of climate change and conflict presents a significant gap in the legal framework, one that Protocol I of the Geneva Conventions, along with other existing IHL norms, fails to adequately address.

²³ Articles 35(3) & 55.

²⁴ Sachs, *The Age of Sustainable Development*, 120-125.

²⁵ S. O'Neill & D. O'Neill, D., "Climate Change, Humanitarianism, and the Protection of Vulnerable Populations", (2015) 35 *Global Environmental Change*, 73-81.

²⁶ P. Sands, *Principles of International Environmental Law*, 366-370.

²⁷ M. Borrero, *Environmental Protection in International Law*, 150-155.

²⁸ M.C. "A Functional Approach to General Principles of International Law," (1989) 11 (3) *Michigan Journal of International Law*, 768-813.

²⁹ P.G. Harris, *International Environmental Law and Climate Change: A Practical Guide* (Cambridge: Cambridge University Press, 2010), 45-60.



While Protocol I does provide certain protections for the natural environment in armed conflict, such as prohibiting attacks on the environment that cause widespread, long-term, and severe damage, its provisions remain insufficient for addressing the complexities of climate-induced environmental harm. As the frequency and intensity of extreme weather events, such as droughts, floods, and hurricanes, increase due to climate change, the damage to ecosystems and infrastructure during armed conflict exacerbates the humanitarian crisis. IHL must evolve to consider the exacerbating factors of climate change, which amplify pre-existing vulnerabilities and create new ones.

This paper has demonstrated that a more integrated approach is required—one that combines the urgency of climate adaptation with the principles of IHL. By enhancing the existing legal framework to include climate change adaptation strategies, the international community can better protect both the environment and civilians in conflict zones. Such integration would not only help in preventing further environmental degradation but also mitigate the long-term impacts on food security, public health, and livelihoods. Additionally, incorporating climate resilience into IHL would further reinforce the connection between environmental protection and the safeguarding of human dignity during conflict, ensuring that the rights of civilians are preserved even as the planet faces increasing environmental stress.

By expanding the legal protections for the environment and incorporating climate resilience, the international community can ensure that the laws of war are fit for the realities of the 21st century. A proactive approach, one that anticipates the challenges posed by climate change, will be essential in ensuring that IHL remains relevant and effective in protecting both the environment and the most vulnerable populations during times of armed conflict.