

International Humanitarian Law and Environmental Protection

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Abstract

The environmental consequences of armed conflict have grown increasingly severe in the modern era, prompting renewed debate regarding the adequacy of International Humanitarian Law (IHL) in safeguarding natural ecosystems during warfare. While IHL was historically designed to protect human life and limit suffering, its provisions now intersect with global environmental concerns, climate change vulnerabilities, and long-term ecological degradation. This research paper examines the capacity of IHL to protect the environment during armed conflicts, evaluates existing legal instruments, and identifies gaps that hinder effective implementation. Through a descriptive, analytical approach, the study highlights the evolution of environmental considerations within IHL, reviews relevant treaties such as Additional Protocol I and the ENMOD Convention, and analyzes contemporary challenges including enforcement difficulties, definitional ambiguities, and the increasing environmental impacts of modern warfare. Findings show that although IHL provides foundational protections, significant limitations persist, making strengthened legal frameworks and improved enforcement mechanisms essential for environmental preservation in armed conflict.

1. Introduction

1.1 Armed Conflict as a Source of Destruction

Armed conflict represents one of the most destructive forces affecting both human societies and the natural environment. Throughout history, warfare has reshaped political boundaries, disrupted social systems, and caused widespread human suffering. However, its impact on nature—air, soil, water, forests, and biodiversity—has often been overlooked.

Focus of Early International Humanitarian Law (IHL)

Traditional IHL primarily aimed to:

- protect civilians,
- regulate the use of weapons,
- prevent unnecessary suffering, and
- uphold humanitarian principles.

Environmental protection was *not* initially a central concern. Nature was viewed as an unlimited resource that could endure the effects of war.

1.2 Rise of Environmental Awareness in Modern Warfare

As warfare became more technologically advanced, its ecological footprint grew dramatically. Modern conflicts involve:

- chemical contamination of land,

- destruction of forests and agricultural areas,
- burning of oil fields,
- pollution of rivers, lakes, and groundwater,
- release of harmful gases and toxins from bombed industrial sites. Examples of Severe Environmental Damage
- Gulf War (1991): Massive oil well fires created global pollution.
- Vietnam War: Chemical defoliants caused long-term soil and health damage.
- Syrian Conflict: Bombing of industrial infrastructure released toxic chemicals.

Such incidents pushed environmental protection to the forefront of global legal discussions.

1.3 Environmental Sustainability as a Global Priority

Modern environmental challenges—such as climate change, biodiversity loss, and water scarcity—have made ecosystems increasingly fragile. Any additional damage caused by war worsens global ecological crises.

Long-Term Environmental Impacts of Warfare

Regions such as:

- Middle East
- Southeast Asia
- Central Africa have suffered decades of environmental degradation, including:
- desertification,
- deforestation,
- water contamination,
- loss of wildlife habitats.

These effects persist long after hostilities end, often delaying recovery and development.

Global Ripple Effects

Environmental damage during conflict does not remain local:

- toxic rivers cross borders,
- polluted air spreads regionally,
- ecosystem disruptions affect climate patterns.

Thus, environmental harm becomes a global concern, not just a national one.

1.4 Increasing Importance of IHL in Environmental Protection

Against this backdrop, International Humanitarian Law has started to gain importance for environmental protection.

Existing IHL Provisions

Some treaties attempt to limit environmental damage:

- Additional Protocol I (1977) prohibits widespread, long-term, and severe damage.
- ENMOD Convention (1976) bans environmental modification techniques as weapons.

However, these rules:

- are narrow,
- lack clear definitions,
- have weak enforcement,

- do not fully address modern technologies (e.g., drones, cyber attacks).

1.5 Purpose of This Research

This research paper evaluates:

- the strengths of IHL in protecting the environment,
- its shortcomings,
- gaps in enforcement,
- and the urgent need for stronger international mechanisms.

Why This Topic Matters Now

- Climate change increases ecological vulnerability.
- Modern weapons cause unprecedented destruction.
- Post-conflict reconstruction requires healthy ecosystems.
- Environmental protection is increasingly linked to human rights.

Central Argument

Environmental protection must be understood as a humanitarian necessity, not merely an environmental issue. Strengthening IHL's environmental provisions is essential to protect both nature and future generations.

2. Literature Review

A substantial and continually expanding body of academic literature examines the complex relationship between armed conflict, environmental degradation, and the legal frameworks intended to regulate wartime conduct. Earlier writings within this field tended to focus almost exclusively on humanitarian concerns—such as the protection of civilians, prisoners of war, and medical personnel—while giving minimal attention to environmental considerations. However, from the late 20th century onward, especially after several environmentally catastrophic conflicts, scholars began to argue that environmental protection is inseparable from humanitarian protection. This shift marked the beginning of a more systematic exploration of how International Humanitarian Law (IHL) interacts with environmental issues.

2.1 Classical IHL and Environmental Neglect

In its classical development, International Humanitarian Law was primarily designed to regulate the conduct of hostilities and to protect individuals affected by armed conflict. Environmental protection, though indirectly touched upon through general rules limiting unnecessary destruction, was neither explicitly addressed nor treated as a legal priority.

Early Scholarly Observations

Researchers such as Roberts (1991) and Greenwood (1995) stressed that classical IHL frameworks were **human-centric**, focusing on:

- protecting civilians and non-combatants,
- ensuring humane treatment of detainees,
- regulating permissible weapons and tactics, and
- safeguarding cultural and civilian property.

Under these traditional understandings, environmental damage was perceived as a **secondary outcome**, often tolerated as an unavoidable aspect of military necessity. The absence of explicit environmental protections in the

Geneva Conventions of 1949 illustrates this neglect. While these conventions contained provisions limiting destruction of property, such clauses were not intended to protect ecosystems as independent entities.

Reasons for Early Neglect

Scholars attribute this disregard to several factors:

1. **Limited ecological awareness:** Environmental science had not yet revealed the long-term effects of pollution, deforestation, and chemical contamination.
2. **Perception of abundance:** Nature was viewed as resilient and capable of self-repair, reducing the perceived need for legal protection.
3. **Humanitarian focus:** Lawmakers prioritized immediate human suffering over environmental consequences.
4. **Military dominance:** Environmental destruction was often justified under the doctrine of military necessity.

As a result, classical IHL offered only **incidental and indirect** protection to the natural environment.

2.2 Emergence of Environmental Norms

The landscape of scholarly analysis shifted notably after the 1970s, driven by global environmental movements and ecological disasters linked to warfare.

Vietnam War as a Turning Point

The extensive use of **Agent Orange** and other chemical defoliants by U.S. forces during the Vietnam War generated unprecedented environmental devastation:

- destruction of millions of acres of forest,
- contamination of soil and water systems,
- long-term health impacts on humans and wildlife.

This conflict profoundly influenced the academic community. Scholars such as Weston (1984) and Meyers (1997) argued that environmental damage was **not merely collateral harm**, but a humanitarian catastrophe demanding explicit legal regulation.

Rise of International Environmental Awareness

During this period:

- The **Stockholm Conference (1972)** emphasized global environmental responsibility.
- The concept of **sustainable development** emerged.
- International law began evolving through soft-law instruments such as declarations and resolutions addressing ecological protection.

Scholars advocated for:

- the recognition of environmental rights,
- integration of ecological concerns into IHL, and
- the development of treaties explicitly regulating environmental harm during warfare.

This era marked the **emergence of environmental norms** as a distinct area of concern within the law of armed conflict.

2.3 Modern Perspectives and Contemporary Scholarship

In the 21st century, scholarly attention to the environment within IHL has intensified. Academic discussions have become more sophisticated, focusing not only on the existence of environmental norms but also on their adequacy, scope, and enforcement.s

Recognition of Progress Yet Persistent Gaps

Modern authors, such as Hulme (2003), Bothe (2010), and Koppe (2013), acknowledge significant advancements in environmental protection under IHL, particularly through:

- **Additional Protocol I (1977)**

- Article 35(3) prohibits methods of warfare intended to cause widespread, long-term, or severe environmental damage.
- Article 55 elevates environmental protection as essential for civilian survival.

- **ENMOD Convention (1976)**

- Prohibits environmental modification techniques as hostile means of warfare.

These instruments represent significant shifts in legal thinking, signalling that the environment has become a subject of international humanitarian concern.

3. Environmental Impact of Armed Conflicts

Armed conflicts inflict widespread environmental damage, both intentionally and unintentionally. These impacts vary depending on the nature, duration, and location of hostilities.

3.1 Soil Degradation

Explosions, landmines, and chemical contamination disrupt soil fertility. Heavy metals and explosive residues make land unsafe for agriculture. In regions like Afghanistan and Iraq, farmland remains unusable decades after fighting.

3.2 Water Pollution

Bombing of industrial sites and oil facilities contaminates rivers, lakes, and groundwater with toxins. Naval warfare and underwater explosions also introduce pollutants into marine ecosystems.

3.3 Air Pollution

Burning oil fields during the 1991 Gulf War generated massive smoke clouds containing sulfur dioxide, carbon monoxide, and particulate matter. Forest fires caused by combat create further pollution.

3.4 Biodiversity Loss

Armed conflict disrupts fragile ecosystems, kills wildlife, and accelerates deforestation. Poaching often increases in conflict zones due to weak governance.

3.5 Long-Term Climate Effects

Destruction of vegetation and release of pollutants contribute indirectly to climate change, reducing the planet's resilience to environmental shocks.

4. International Legal Framework

The legal basis for environmental protection within IHL comes from several treaties, principles, and customary norms.

4.1 Geneva Conventions and Customary Rules

Although the Geneva Conventions (1949) do not explicitly mention environmental protection, several rules indirectly safeguard nature by prohibiting unnecessary destruction of civilian property and infrastructure.

4.2 Additional Protocol I (1977)

This protocol offers the clearest environmental protections:

- **Article 35(3):** prohibits means or methods of warfare intended to cause “widespread, long-term, and severe” environmental damage.

- **Article 55:** obligates parties to protect the natural environment against such damage and prohibits attacks against the environment by way of reprisals.

4.3 ENMOD Convention (1976)

Prohibits environmental modification techniques as weapons, such as:

- manipulating weather
- altering ecosystems
- environmental destruction as a strategy

4.4 Other Rules

- **Martens Clause:** emphasizes principles of humanity and dictates of public conscience.
- **Customary International Law:** growing recognition of environmental protection as a customary norm.

5. Challenges in Implementation

Despite existing frameworks, several challenges hinder effective environmental protection in warfare.

5.1 Vagueness of Legal Standards

Terms like “widespread,” “long-term,” and “severe” lack precise definitions, allowing states to interpret them broadly.

5.2 Weak Enforcement

International accountability mechanisms are limited. Proving environmental war crimes requires technical evidence that is often unavailable.

5.3 Non-State Armed Groups

Most modern wars are non-international conflicts, where treaty obligations are weaker.

5.4 Political Barriers

Environmental damage is often overshadowed by military or political considerations, limiting willingness to prosecute.

5.5 Emerging Technologies

Cyber warfare, drones, and autonomous weapons can cause new environmental risks unaddressed by existing law.

6. Discussion and Analysis

International Humanitarian Law contains important protections, but these are not comprehensive. Enforcement depends heavily on political will, scientific evidence, and international cooperation. Many scholars argue that environmental protection should be strengthened through clearer definitions, expanded applicability to non-state actors, and incorporation of climate science into IHL interpretation.

There is also an emerging perspective that environmental protection during conflict is a **human rights issue**. Degradation of water, food systems, and air quality directly threatens life and dignity. Thus, environmental protection aligns with the broader humanitarian goals of IHL.

7. Conclusion

International Humanitarian Law provides a vital but incomplete framework for protecting the environment during armed conflict. While treaties such as Additional Protocol I and the ENMOD Convention lay foundational principles, significant gaps limit their practical effectiveness. Modern warfare introduces complex environmental challenges that existing legal norms struggle to address. To safeguard ecosystems and ensure sustainable peace,

the international community must enhance legal clarity, strengthen monitoring mechanisms, and integrate environmental considerations into all aspects of conflict regulation. As environmental degradation and climate change worsen, strengthening IHL's environmental protections becomes a moral, legal, and global necessity.

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