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WHITE BLACK LEGAL is an open access, peer-reviewed and refereed journal providededicated to express views on topical legal issues, thereby generating a cross current of ideas on emerging matters. This platform shall also ignite the initiative and desire of young law students to contribute in the field of law. The erudite response of legal luminaries shall be solicited to enable readers to explore challenges that lie before law makers, lawyers and the society at large, in the event of the ever changing social, economic and technological scenario.

With this thought, we hereby present to you

# **CLIMATE CHANGE AND ARMED CONFLICT: STRENGTHENING ENVIRONMENT PROTECTION UNDER INTERNATIONAL HUMANITARIAN LAW**

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## **INTRODUCTION**

Climate change and armed conflict are two of the most critical challenges faced by the world today. On one hand, climate change disrupts ecosystems, affects livelihoods, and forces communities to adapt to unpredictable weather patterns. On the other hand, armed conflicts bring immediate devastation causing loss of life, displacement, and long-lasting destruction. What often goes unnoticed is how these two crises overlap, making vulnerable communities even more fragile. Armed conflicts not only harm people but also leave behind damaged ecosystems, polluted water sources, and destroyed natural resources. These environmental consequences, combined with the ongoing impacts of climate change, create a dangerous cycle that is difficult to break<sup>1</sup>.

International humanitarian law (IHL), which is designed to limit the suffering caused by war, recognizes the need to protect the environment during armed conflicts<sup>2</sup>. The Geneva Conventions and their Additional Protocols prohibit the use of warfare methods that cause widespread, long-term, and severe damage to the environment. However, these rules were developed decades ago, and they do not fully address the challenges that modern conflicts and climate change bring. As climate change intensifies competition over resources like water and arable land, it increases the likelihood of conflict, making it even more important to protect the environment during times of war.

Protecting the environment in conflict zones is no longer just an option, it is a necessity. Stronger legal frameworks are needed to hold parties accountable for environmental damage,

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<sup>1</sup> United Nations Environment Programme (UNEP), *Environmental Dimensions of Armed Conflict* (2016), available at: <https://www.unep.org/resources/report/environmental-dimensions-armed-conflict>.

<sup>2</sup> Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977, Articles 35(3) and 55.

to ensure that military decisions consider the long-term impact on ecosystems, and to help communities recover after the fighting stops. As climate change continues to reshape global security dynamics, we must rethink how international law approaches environmental protection during armed conflicts. This article aims to give a summary of the relevant rules from the domains of international environmental law (IEL) and international humanitarian law (IHL) that may address the effects of climate change on conflicts. It expresses the connection between IHL and IEL using a coherency-based methodology.

## CLIMATE CHANGE AND ARMED CONFLICT

There are several ways to look at the connection between armed conflict and climate change. Climate change acts as a “threat multiplier,” exacerbating pre-existing social, political, and economic tensions in vulnerable regions. For example, it is reported that “12 of the 20 countries which, according to the ND-GAIN (Note Dame Global Adaptation Initiative) Country Index, are the most vulnerable to climate change are also sites of armed conflict.”<sup>3</sup> Twelve of the twenty nations identified by the ND-GAIN Country Index as the most vulnerable and least prepared to adapt to climate change are also experiencing armed conflict. This statistic is reflected in the daily operations of the ICRC: in Iraq and Yemen, for instance, water scarcity endangers public health and undermines food and economic security.

Armed conflicts not only take a devastating toll on human lives but also wreak havoc on the environment. Modern warfare often involves the destruction of critical infrastructure, contamination of water sources, and deforestation. During conflicts, oil facilities, power plants, and industrial sites are frequently targeted, releasing toxic chemicals into the environment and causing long-term pollution. A striking example is the 1991 Gulf War, where the deliberate burning of Kuwaiti oil fields released enormous amounts of harmful substances into the atmosphere, leading to severe environmental damage that lasted for years.<sup>4</sup>

Moreover, armed factions frequently take advantage of natural resources to finance their activities, resulting in unregulated extraction and harm to the environment. This situation not only extends the duration of conflicts but also deprives local populations of their natural assets, leaving them impoverished and unstable long after the violence has ended. The ecological

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<sup>3</sup> **OCHA**, *Global Humanitarian Overview 2023*, 1 December 2022, 4, available at: <https://reliefweb.int/report/world/global-humanitarian-overview-2023-en> (last visited 27 March 2025).

<sup>4</sup> UNEP, *Environmental Assessment of the Gulf War* 12 (1993).

repercussions of warfare hinder attempts to restore communities and ecosystems, complicating recovery in the post-conflict era. Another significant factor in the relationship between climate change and conflict is migration driven by climate issues. As climate change renders certain areas unliveable due to rising sea levels, droughts, or severe weather phenomena, millions are compelled to abandon their homes in search of safety and stability<sup>5</sup>. This widespread displacement frequently strains host communities, resulting in intensified competition for resources and growing tensions. When governments and international organizations fail to offer sufficient support and protection for these displaced individuals, the situation deteriorates further, elevating the likelihood of conflict.

To sum up, the connection between climate change and armed conflict is complex and deeply rooted in environmental, social, and political factors. Addressing these challenges requires more than just traditional conflict resolution strategies. Strengthening environmental protection under international humanitarian law (IHL) is essential to mitigating the long-term impacts of climate change and preventing conflicts fuelled by environmental stress. As climate change continues to reshape the world, it is crucial that we develop stronger legal frameworks and sustainable solutions to protect both people and the planet.

## ENVIRONMENT PROTECTION UNDER INTERNATIONAL HUMANITARIAN LAW (IHL)

IHL does not define the term "*natural environment*." In the broadest sense possible, the natural environment is thought to include the general hydrosphere, biosphere, geosphere, and atmosphere (which includes plants, animals, and other water bodies, soil, and rocks), as well as natural elements created by human activity and the system of inextricable relationships between living things and their inanimate surroundings. **International Humanitarian Law (IHL)**, also known as the law of armed conflict, aims to mitigate these adverse impacts by regulating the conduct of hostilities and protecting the environment from excessive and unnecessary harm. Also, there are specific treaty and customary rules to protect the environment during armed conflict. They provide that it is prohibited to use methods or means of warfare which are intended or may be expected to cause widespread, long-term, and severe damage to the natural environment.

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<sup>5</sup> International Organization for Migration (IOM), *Migration, Environment and Climate Change: Assessing the Evidence* 19 (2009).

### **Environmental Protection in the Geneva Conventions and Additional Protocols**

IHL, which governs armed conflicts, is primarily rooted in the **Geneva Conventions of 1949** and their **Additional Protocols of 1977**, which set forth rules to protect civilians and civilian objects. Although environmental protection is not the primary focus of these treaties, the provisions implicitly and explicitly safeguard the environment. Additionally, the **Rome Statute of the International Criminal Court (ICC), 1998**, recognizes the intentional destruction of the environment as a war crime, holding individuals accountable for such actions. These legal frameworks collectively create a strong foundation for ensuring that the environment is protected even in times of war.

**Article 35(3) of Additional Protocol I** prohibits the use of weapons, methods, or means of warfare that are intended or expected to cause “widespread, long-term, and severe damage to the natural environment.”<sup>6</sup> This provision sets a high standard for environmental protection by requiring that all three conditions—widespread, long-term, and severe—are met for a violation to occur.

**Article 55 of Additional Protocol I** further strengthens environmental protection by emphasizing the need to protect the environment from harmful military operations. It mandates that:

*“Care shall be taken in warfare to protect the natural environment against widespread, long-term, and severe damage. This protection includes a prohibition of the use of methods or means of warfare that are intended, or may be expected, to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.”<sup>7</sup>*

This provision acknowledges the direct link between a healthy environment and human survival, emphasizing that environmental destruction can threaten public health and the livelihoods of communities.

**Additional Protocol II**, which applies to non-international armed conflicts (NIACs), does not contain specific provisions for environmental protection. However, the general principles of IHL, such as the protection of civilian objects and the prohibition of indiscriminate attacks, implicitly safeguard the environment by preventing unnecessary harm to civilian infrastructure

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<sup>6</sup> Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977, Art. 35(3).

<sup>7</sup> Ibid, Art. 55(1).

and resources<sup>8</sup>

### **Environmental Protection and under the Rome Statute**

The **Rome Statute of the International Criminal Court (ICC), 1998**, goes a step further by explicitly recognizing environmental harm as a war crime.

#### **Article 8(2)(b)(iv) of the Rome Statute**

*“Intentionally launching an attack in the knowledge that such an attack will cause widespread, long-term, and severe damage to the natural environment, which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated.”<sup>9</sup>*

This provision mirrors the language of Article 35(3) and Article 55 of Additional Protocol I, highlighting that causing excessive environmental harm during armed conflict can lead to individual criminal liability. However, the stringent criteria of “widespread, long-term, and severe” damage make it challenging to establish and prosecute such violations effectively.

Moreover, the ICRC recommends that parties to an armed conflict conclude special agreements to provide additional protection to the natural environment. The identification of areas of particular environmental importance or fragility (such as national parks, natural reserves, key biodiversity areas, etc.) and their designation as demilitarized zones, in Main rules and interpretations on the protection of the environment in armed conflict: peacetime or during armed conflict, have been particularly highlighted.<sup>10</sup>

However Rome Statute does not currently define "ecocide" as an independent crime, there is growing support for its addition. Ecocide is described as **“illegal or reckless actions taken with an awareness that there is a significant possibility of causing serious and either widespread or long-lasting harm to the environment. Acknowledging ecocide as an international offense would enhance the legal framework for holding accountable those responsible for extensive environmental damage during wartime and foster increased responsibility.**

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

<sup>9</sup> Rome Statute of the International Criminal Court, 17 July 1998, Art. 8(2)(b)(iv)

<sup>10</sup> **International Committee of the Red Cross (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*, 2020, p. 33

In addition to treaty-based obligations, principles of **customary international law** offer additional safeguards for the environment. The **International Court of Justice (ICJ)**, in its **1996 Advisory Opinion on the Legality of the Threat or Use of nuclear weapons**, affirmed that:

*“The environment is not an abstraction but represents the living space, the quality of life, and the very health of human beings, including generations unborn.”<sup>11</sup>*

This acknowledgment reinforces the intrinsic value of environmental protection as a fundamental aspect of human security and sustainable development.

While many of IHL’s environmental protection provisions apply to international armed conflicts (IACs), protecting the environment during **non-international armed conflicts (NIACs)** remains challenging. **Additional Protocol II**, which applies to NIACs, does not contain explicit provisions on environmental protection. However, general principles of IHL, such as the prohibition of attacks on civilian objects and the protection of objects indispensable to civilian survival, offer indirect protection to the environment in such conflicts.

**Article 14 of Additional Protocol II** prohibits attacks on objects indispensable for the survival of the civilian population, such as agricultural areas, water sources, and irrigation works. Since these resources are often directly linked to the environment, their protection helps mitigate environmental harm in internal conflicts.

To effectively protect the environment during armed conflicts, it is essential to integrate environmental considerations into military planning and decision-making. Military commanders are obligated to assess the potential environmental impact of their operations and take all feasible measures to prevent unnecessary harm to the environment.

### **Operational Guidelines for Environmental Protection**

The **ICRC’s Guidelines on the Protection of the Natural Environment in Armed Conflict (2020)** provide practical recommendations for integrating environmental considerations into military operations. These guidelines emphasize the importance of conducting **environmental impact assessments (EIAs)** before launching military operations and adopting

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<sup>11</sup> Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, I.C.J. Reports 1996, para. 29.

environmentally responsible tactics.<sup>12</sup>

It is a fact that any warfare not only continues to silently harm the environment but also presents several legal and humanitarian concerns as well.

## ECOCIDE AS A WAR CRIME

The concept of ecocide—the large-scale destruction of the environment—has gained significant attention in recent years, especially in the context of armed conflicts. Ecocide, broadly understood, involves deliberate actions that cause long-lasting, severe, and widespread damage to the environment. While international humanitarian law (IHL) contains provisions aimed at protecting the environment during war, recognizing ecocide as a separate crime under international law would strengthen efforts to hold perpetrators accountable for environmental destruction. Although the Rome Statute of the International Criminal Court (ICC) addresses environmental harm to some extent, ecocide as an independent offense has yet to be formally recognized.

### Consequences

Ecocide can be described as “unlawful or wanton acts committed with the knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment.”<sup>13</sup> The consequences of such destruction extend beyond ecological harm, affecting the lives and livelihoods of communities that depend on natural resources. During armed conflicts, intentional attacks on the environment—such as burning oil fields, bombing industrial sites, or using harmful chemicals—can devastate ecosystems, render land unusable, and force local populations to flee. The inclusion of ecocide as a recognized crime would create a legal framework to hold those responsible accountable and deter future environmental atrocities.

Although Article 8(2)(b)(iv) criminalizes and acknowledges the gravity of environmental damage during armed conflict, its scope is limited. The requirement that the damage be **“widespread, long-term, and severe”** sets a high bar for prosecution, making it difficult to

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<sup>12</sup> International Committee of the Red Cross (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*, 2020, p. 12.

<sup>13</sup> Higgins, Polly. *Eradicating Ecocide: Laws and Governance to Stop the Destruction of the Planet*, Shephard-Walwyn, 2010, p. 20.

hold perpetrators accountable. Furthermore, proving that the environmental harm was intentional and disproportionate to military advantage has posed significant challenges in practice.

Recognizing **ecocide** as a separate crime under international law would help bridge the existing legal gaps. Environmental destruction often does not fit neatly within the existing definitions of war crimes, crimes against humanity, or genocide. As a result, perpetrators of environmental harm may escape justice. Legal scholars and environmental advocates have called for the inclusion of ecocide as the “**fifth core international crime**” in the Rome Statute, alongside genocide, war crimes, crimes against humanity, and aggression.

In 2021, the **Stop Ecocide Foundation** convened a panel of international legal experts who proposed a draft definition of ecocide. According to this definition, ecocide refers to:

“Unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment caused by those acts.”<sup>14</sup>

This proposed definition lowers the threshold for prosecution by focusing on intentional or reckless environmental harm. Recognizing ecocide as a crime would empower the ICC to hold individuals and state actors accountable for environmental destruction, even in cases where the harm does not directly impact human populations but threatens ecosystems and biodiversity.

The inclusion of **ecocide** as a war crime would also contribute to advancing **climate justice**. Environmental destruction caused during armed conflicts releases large amounts of greenhouse gases, disrupts fragile ecosystems, and accelerates climate change. Recognizing ecocide would not only deter future acts of environmental harm but also promote long-term environmental sustainability by holding perpetrators accountable.

Moreover, prosecuting ecocide would send a strong message that environmental harm, whether intentional or reckless, is not only morally unacceptable but also legally punishable. Strengthening legal frameworks to address environmental destruction would encourage state and non-state actors to adopt sustainable practices, reducing the risk of climate-induced humanitarian crises.

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<sup>14</sup> Stop Ecocide Foundation, *Independent Expert Panel for the Legal Definition of Ecocide: Commentary and Core Text*, June 2021, p. 4.

## **CASE STUDIES: CLIMATE CHANGE, ARMED CONFLICT, AND ECOCIDE UNDER INTERNATIONAL HUMANITARIAN LAW (IHL)**

The devastating impact of armed conflicts on the environment has raised serious concerns about long-term ecological damage and its contribution to climate change. Several real-world examples illustrate how the destruction of ecosystems during wartime has not only harmed biodiversity but also exacerbated environmental degradation, often meeting the criteria of **ecocide**. These cases underscore the urgent need to strengthen environmental protections under **International Humanitarian Law (IHL)** to prevent further destruction.

### **1. The Gulf War Oil Fires (Kuwait, 1991)**

During the Gulf War in 1991, retreating Iraqi forces set ablaze more than 600 oil wells in Kuwait, creating one of the largest environmental disasters in history. The fires burned for almost 10 months, releasing millions of tons of toxic pollutants into the atmosphere.

The impact was:

- The oil fires emitted vast amounts of carbon dioxide and other greenhouse gases, significantly contributing to climate change.
- Thick smoke blocked sunlight, affecting regional temperatures and weather patterns.
- The burning oil contaminated soil and groundwater, rendering vast areas of land uninhabitable.

This deliberate act of environmental destruction violates **Articles 35(3) and 55 of Additional Protocol I to the Geneva Conventions (1977)**, which prohibit methods of warfare causing widespread, long-term, and severe damage to the natural environment. The **United Nations Compensation Commission (UNCC)** later ordered Iraq to pay reparations for the environmental damage caused.<sup>15</sup>

### **2. Agent Orange and the Vietnam War (Vietnam, 1961–1971)**

Between 1961 and 1971, the U.S. military used Agent Orange, a powerful herbicide, to defoliate forests and destroy agricultural lands in Vietnam, Laos, and Cambodia. The widespread use of Agent Orange caused irreparable environmental damage and long-

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<sup>15</sup> Report of the United Nations Compensation Commission, S/AC.26/1991/7/Rev.1, available at: <https://www.uncc.ch/>.

term health consequences.

The impact was:

- The destruction of over 5 million acres of forest led to the loss of biodiversity and habitat.
- Soil and water sources were contaminated with dioxins, which persist in the environment to this day.
- The toxic effects of dioxin exposure continue to impact generations, leading to birth defects and genetic mutations.

The large-scale destruction caused by Agent Orange aligns with **Article 55 of Additional Protocol I**, which emphasizes the need to protect the environment during armed conflicts. The Vietnam War serves as a powerful example of how warfare can lead to environmental degradation and human suffering.<sup>16</sup>

### 3. The Deepwater Horizon Oil Spill (Gulf of Mexico, 2010): Potential Threats in Armed Conflict

Although the Deepwater Horizon oil spill was an industrial accident, similar scenarios involving oil refineries or chemical plants targeted during armed conflict could result in environmental catastrophes.

The impact was:

- Release of 4.9 million barrels of crude oil into the Gulf of Mexico, severely damaging marine ecosystems.
- Long-term contamination of coastal areas, affecting local communities and biodiversity.
- Significant carbon emissions and ocean pollution with lasting ecological consequences.

If a similar incident occurred during armed conflict, it could be considered **ecocide** and a violation of **Articles 35(3) and 55 of Additional Protocol I**. This case underscores the importance of safeguarding critical environmental assets during armed conflicts.<sup>17</sup>

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<sup>16</sup> Vietnam Association for Victims of Agent Orange v. Dow Chemical Co., 517 F.3d 104 (2d Cir. 2008).

<sup>17</sup> National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling, January 2011.

#### 4. Russian Invasion of Ukraine (2022–Present): Environmental Consequences

The ongoing Russian invasion of Ukraine has caused severe environmental destruction, with attacks on industrial facilities, energy infrastructure, and chemical plants resulting in the release of hazardous substances into the environment.

- Contamination of air, soil, and water from damaged chemical plants and industrial sites.
- Increased carbon emissions from burning oil depots and energy infrastructure.
- Risks of nuclear contamination due to attacks near the **Zaporizhzhia Nuclear Power Plant**, the largest in Europe.

The environmental harm caused by the conflict raises concerns of **ecocide** and potential violations of **Articles 35(3) and 55 of Additional Protocol I**. The destruction of critical infrastructure may also fall under **Article 8(2)(b)(iv) of the Rome Statute of the International Criminal Court (ICC)**, which criminalizes acts causing severe environmental damage during armed conflict which is ongoing and still no solution found.

These case studies highlight the devastating consequences of armed conflicts on the environment, emphasizing the need to strengthen environmental protections under **International Humanitarian Law (IHL)**. Incorporating **ecocide** as an international crime and enforcing the provisions of **Additional Protocol I** and the **Rome Statute** can play a critical role in preventing further environmental atrocities and ensuring accountability.

### PROPOSALS FOR REFORMS

The impact of modern warfare extends far beyond physical destruction and displacement, with environmental degradation emerging as a critical and often overlooked consequence. Environmental harm caused by armed conflicts does not remain confined to the borders of the nations involved but spreads across regions, posing long-term risks to human lives and livelihoods. A stark example is the Ukraine-Russia crisis, where the invasion of the **Zaporizhzhia** and **Chernobyl** nuclear plants has heightened the threat of radiation and environmental contamination, endangered not only local populations but also created global ecological risks. Furthermore, the disruption of essential food supplies, such as wheat and sunflower oil — of which Ukraine and Russia account for 29% and 62% of global production, respectively — has triggered severe food insecurity, particularly in African nations. This crisis serves as a powerful reminder that in an increasingly interconnected world, the consequences of localized conflicts ripple across the globe.

In light of these growing challenges, there is an urgent need to strengthen environmental protection within the framework of **International Humanitarian Law (IHL)**. While the **Geneva Conventions, Additional Protocols, and the Rome Statute** provide some safeguards, these provisions often lack clarity, enforceability, and adaptability to address the evolving environmental threats posed by modern warfare. Bridging these gaps through targeted reforms can ensure better protection of the environment during armed conflicts and safeguard vulnerable ecosystems for future generations.

### 1. Recognize Ecocide as an International Crime

This would be a crucial step in protecting the environment during conflicts. Defined as the large-scale destruction of ecosystems, ecocide harms biodiversity and disrupts local livelihoods.

### 2. Strengthen Environmental Provisions in the Geneva Conventions and Additional Protocols

While the **Geneva Conventions** and **Additional Protocols** provide some environmental protection, these provisions need clearer definitions, stricter prohibitions on targeting sensitive ecosystems, and guidelines to minimize harm.

### 3. Establish an International Environmental Monitoring Body

Establishing an **International Environmental Monitoring Body (IEMB)**, in collaboration with the **ICRC** and **UNEP**, would enhance accountability by assessing, documenting, and reporting environmental harm during armed conflicts.

### 4. Designate Demilitarized Environmental Zones

Designating **ecologically sensitive areas** like biodiversity hotspots and natural reserves as **demilitarized zones (DMZs)** would prevent military activity and reduce the risk of environmental devastation during armed conflicts.

### 5. Implement Post-Conflict Environmental Remediation

A **post-conflict environmental remediation mechanism** under **UNEP** would restore damaged ecosystems and help communities rebuild livelihoods by mobilizing resources and expertise for effective recovery.

## CONCLUSION

The devastating impact of armed conflict on the environment extends far beyond the duration of hostilities, posing long-term threats to ecosystems, biodiversity, and human livelihoods. As climate change amplifies these risks, strengthening International Humanitarian Law (IHL) becomes imperative to safeguard vulnerable environments. While existing frameworks such as the Geneva Conventions, Additional Protocols, and the Rome Statute offer some protection, they require modernization and clearer enforcement mechanisms. Recognizing ecocide as a war crime, establishing demilitarized environmental zones, and creating a post-conflict.

Designating **demilitarized environmental zones (DMZs)** in ecologically sensitive areas, such as biodiversity hotspots and fragile ecosystems, is a crucial step toward minimizing environmental devastation during armed conflicts. By protecting these vulnerable areas from military activities, the risk of irreversible damage to the environment can be significantly reduced. Alongside this, establishing an **International Environmental Monitoring Body (IEMB)**, in collaboration with the **International Committee of the Red Cross (ICRC)** and the **United Nations Environment Programme (UNEP)**, would create a robust system for assessing, documenting, and reporting environmental harm caused by conflicts. Such a framework would not only ensure transparency and accountability but also provide critical evidence for prosecuting violations and recommending appropriate measures for environmental restoration.

In addition, introducing a **post-conflict environmental remediation mechanism** under **UNEP** would play a vital role in restoring damaged ecosystems and supporting communities in rebuilding their livelihoods after the devastation of war. This mechanism would mobilize the necessary resources and expertise to ensure timely and effective environmental recovery, enabling affected communities to regain stability and thrive once again.