



# The Agonising Narrative of Environmental Dilapidation in the tussle of Armed Conflict; From the Lens of International Humanitarian Laws

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**Author's contribution**

*The sole author designed, analysed, interpreted and prepared the manuscript.*

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## ABSTRACT

It is reasonable that humans have long recorded war fatalities in terms of injuries, death of combatants and civilians, the devastation of cities, and lost livelihoods; we fail to consider the environment, yet, we cannot disregard this issue. The study focuses on how war fuelled catastrophic environmental proceedings have continued to contamination of land, destruction of forests, plunder natural resources, and climate change, forcing the mass displacement of populations within and across borders and creating threats to human health; accordingly, these threats include the direct and indirect consequences of war and conflict such as a lack of clean air, water, nutrition, and housing, increased exposure to infectious diseases, and psychological trauma. The United Nations already tries to reduce the destruction from warfare through international laws called the Fourth Geneva Convention. However, this law has not stopped the degradation of the environment during the war. There is a need for a new set of rules that protect human health and the environment during armed conflict. In this study, the current study engaged in the debate and

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contextualises it with the research related to the war and environment to offer a better explanation than what already exists and, on its subtext, what the social renovation model needs to bear to stand the test of time and challenges. This research is a normative legal study in which part of the literature will be reviewed to acquire the necessary data using normative approaches. This study will collect and use secondary data from primary, secondary, and legal documents.

*Keywords: Environmental degradation; climate change; devastation; green-house gases; war and armed conflict.*

## 1. PROLOGUE

The military's use of fossil fuels, chemical spills, the deployment of weapons of mass destruction (WMD), nuclear, chemical, biological, and conventional weapons, and the use of light and small arms have all impacted the environment [1]. Similarly, the indiscriminate military strikes using bombs, drones, cluster bombs, land mines, unexploded munitions, and other means, such as dust from the sand, smoke from burn pits, aerosolized metals, and chemicals from detonated IEDs, also result in environmental degradations [2].

War directly impacts the environment, causing high temperatures, a drought that damages farms and causes crop failure, food shortages, loss of fertility, and catastrophic disruptions like flooding or drought. The effects of war also have an environmental impact on health, which results in harm, illness, early mortality, mental disturbance, respiratory ailments, and displaced people in misery [3]. However, militaries have a history of purposefully destroying the natural world. For instance, as correctly noted by the conservation scientist Jeffrey McNeely, the British efforts to put an end to a rebellion in Malaya by chemical spraying to kill jungle crops planted by rebels served as inspiration for the U.S. Spraying program [4].

To expand the discussion based on military goals, there are two ways; war impacts the environment: deliberate or incidental.

### 1.1 First, the Deliberate Destruction of the Environment by Armed Conflict

Environmental terrorism, also known as ECOCIDE, is the deliberate destruction of the environment to achieve military aims [5]. For instance, different chemical mixtures, code-named according to coloured bands painted on their storage drums, were used in Vietnam when the USA used Agent Orange to destroy the

plantations and forests. In 1960, the U.S. military sprayed 79 million litres of herbicides and defoliants over roughly one-seventh of the land area of southern Vietnam, [6] and the Mangrove forests along Vietnam's coast sustained the most damage. Mangroves can survive where land meets the sea because their roots remove the salt from the water, allowing freshwater into the plant's leaves. The defoliants disrupted this filtering system, allowing toxic salt levels to build up in the plants. Even years after spraying, the vegetation could not regrow, leaving the mudflats barren. The experts described the spread mangrove region as "strange and forlorn."

Similar incidents happened during the first Persian Gulf War when Saddam Hussain destroyed hundreds of Kuwaiti oil wells. Additionally, they caused the most significant oil disaster in history by dumping 11 million barrels of oil into the Gulf [7]. The area was covered in thick oil deposits, and more than ten years later, researchers discovered oil residue in ants and sand lizards. These spills harmed the delicate salt marsh and mangrove swamp habitat along more than 560 Kilometres (350 miles) of shoreline [8]. The Royal Air Force pilots destroyed two German dams in May 1943. Over 7,000 acres of agriculture were damaged by the storm, which flooded 125 factories and many coal mines [9]. US forces employed similar strategies throughout the Korean War. Dam breaches done on Art. 15 of the Geneva Conventions as of 1977 prohibit purposeful destruction of dams and dykes; such military initiations result in "serious losses among the civilian population [10]."

### 1.2 Second, the Accidental Destruction of the Environment by Armed Conflict

The environment is severely impacted by armed warfare. For instance, petroleum-based fuels are quite frequently used in military vehicles. In addition to CO<sub>2</sub>, the cars used in combat zones emit hundreds of thousands of tonnes of

Nitrogen Oxide, Hydrocarbons, and Sulphur Dioxide [11].

Soldiers and civilians in conflict zones have suffered from poor public health due to air pollution from military equipment and vehicles. Heavy military vehicles generate more dust than usual, which exposes troops to pollutants they can ingest and cause respiratory problems. The oil contaminates the water supply in conflict areas from military vehicles, depleted uranium, and ammunition, negatively influencing the animal and bird population and the severe destruction of forest cover.

In every armed conflict, many refugees gather without the infrastructure to accommodate them, see Afghanistan and Ukraine [12]. To meet their basic requirements, refugees look to natural resources like forests. For instance, attacks during the Gulf War wrecked urban infrastructure, causing sewers to overflow into the streets and rivers and affecting the water quality. The Rwanda Civil War saw nearly a quarter of a million people in camps. They prepare makeshift homes for cooking daily using roughly 1000 tonnes of wood from the park. By the time the battle was over, 35 sq km of the forest had been destroyed, and 105 sq km had been damaged.

Iraqi populations are thought to have seen a substantial increase in leukaemia cases, premature births, miscarriages, and congenital birth problems due to the American bombing of the country [13]. Doctors in the Iraqi city of Fallujah continue to see a sharp increase in severe congenital anomalies, such as twins, children with one eye, several tumours, disfigured face and body deformities, and complex nerve system issues. Depilated Uranium (DU), used in US Army weaponry, is to blame for all these health problems [14].

Iraq-Afghanistan War lung injuries (IAW-LI) are common among soldiers sent to these countries as part of military strategies. In addition to respiratory problems, soldiers sent to Iraq and Afghanistan had a seven times higher rate of lung injury than personnel sent elsewhere [15].

## **2. LAW PROHIBITING THE USE OF DEPLETED URANIUM (DU) WEAPONS**

The Geneva Conventions were amended in 1977 by Protocol I, whereby under Art. 35 prohibits countries from using weapons that could cause

severe and protracted harm to human health [15].

The consequences of DU that have been seen in Iraq show that these weapons are prohibited by Art. 35 due to the possibility of long-lasting repercussions on human health and the environment [16]. According to Art. 36 (Protocol I), a legal assessment of a new weapon must be conducted by every state researching, developing, or purchasing it. Thus, Belgium in 2007 and Costa Rica in 2011 have enacted laws prohibiting the use of Depleted Uranium by the military [17]. According to a resolution issued by the European Parliament in 2008, [18]. The use of DU warfare violates fundamental norms and standards of customary international, humanitarian, and environmental law.

## **3. IMPACT OF WAR ON THE ENVIRONMENT**

The environment is impacted by war in numerous ways. War frequently causes disruptions in the use of land, water supply, air quality, biological resources, and the operation of ecosystem services. The effects of war on natural resources are widespread, continuing, and enduring. It can be brought on by the deliberate physical destruction of the environment, the discharge of pollutants during or before hostilities, or social unrest that results in refugee populations, resource depletion, and subsistence living [2].

The destruction of infrastructure is another facet of war. Transportation, medical services, water supply, sewage disposal, energy, and communication infrastructure, to name a few, can all be seriously jeopardized. Farmers and conservationists frequently abandon traditional techniques of operation. It's possible that resources for the environmental protection systems were shut down and instead went into military equipment [19]. Destruction can harm essential ecosystem functions in ecological infrastructure brought on by war. The terrain can be significantly altered by military activity during a conflict. Temporary fortifications, roadways, and the debris left behind by armies are examples of supporting operations in battle [14].

without taking environmental sustainability into account. Tanks and other personnel carriers, in particular, obliterate vegetation, disturb and loosen the soil's top, and compact the soil's deeper layers, decreasing soil fertility. Landmines make it impossible to cultivate craters

or a serious threat by generating massive craters [14]. Explosives and machines are used in warfare today to conquer enemies and areas. Warfare's technological "advancement" has been strikingly paralleled by the severity of environmental harm it causes. Increasingly environmental damage results from the use of more modern weapons and ammunition.

#### **4. IMPACT OF MINES ON THE ENVIRONMENT**

Anti-personnel landmines (AP) pose a significant risk to the environment, human livelihood, and sustainable development process, affecting the present and future generations. The destruction of flora and wildlife by mines depletes biological diversity and promotes the hasty and unsustainable exploitation of marginal and ecologically vulnerable places. The devastation of the environment by interfering with soil and water processes and contaminating the area's soil and water with highly harmful compounds. During civil conflicts, mines are frequently placed near roads, power lines, electric plants, irrigation systems, water plants, dams, and industrial facilities. Following those confrontations, it is often impossible to respond to such facilities to do the necessary repairs or maintenance [19].

##### **4.1 Crops and Vegetation**

Mines reduce soil production by destroying flora and harming the soil's structure. Mines inflict long-term direct harm to the soil through fragmentation and displacement, destruction of soil structure, and increased soil vulnerability to water and wind erosion, all negatively impacting ecosystems. For instance, Landmines have significantly decreased soil production in Vietnam. Rice yield has been reduced by 50%. Additionally, the devastation brought on by the deployment of defoliants like "Agent Orange," along with the removal of vegetation cover and soils by mines and UXO, has a cumulative effect [21]. In steep areas, less water is retained, which leads to flooding and topsoil erosion in flat coastal regions.

##### **4.2 Livestock**

Livestock is being killed by landmines, which is a significant loss. More than 125,000 camels, sheep, goats, and cattle were killed in Libya between 1940 and 1980 due to mines and other UXO [22]. About 264,000 sheep and goats, worth about \$31.6 million, were slaughtered in

Afghanistan. The same is true with cows, horses, camels, and cars. Mine-related harm to vehicles and animals has a total direct cost of around \$155 million. Excessive land mining creates a hazardous environment for many types of life. It's possible to exterminate entire species. Kuwait suffered a loss of 30,000 marine birds as a result of the Iraqi army's 1991 fire of oil fields [23]. The use of defoliants in Afghanistan and Vietnam has brought on similar significant habitat loss.

##### **4.3 Pollution**

As the casing of landmines corrodes and decays, harmful compounds are also released into the environment. Hexahydro-1,3,5-trinitro-1,3,5-triazine and 2,4,6-trinitrotoluene (TNT) are frequently used in mines [24]. (RDX, or "Cyclonite"), and as the metal or wooden casings decay, these chemicals may leak into the nearby soil and water. These substances are soluble in water, long-lasting, carcinogenic, and very poisonous, even in small amounts, as are the compounds formed from them when they break down. Fish, aquatic microbes, and animals are all killed by TNT and RDX. For mammals, RDX is especially hazardous.

Cluster bombs and the deployment of Depleted Uranium artillery (included in Tomahawk missiles) will have a lasting and pernicious negative impact on Afghanistan's environment and the civilian population. Nuclear waste is depleted uranium. It is a by-product of enriching uranium from the earth to make nuclear fuel and weapons. Given that it is twice as dense as lead, depleted uranium can be used to create weapons that can penetrate armour. Additionally, it is pyrophoric, igniting upon impact with a target or on its own. Its tiny particles are easily absorbed and dispersed across a wide area. According to reports, exposure to depleted uranium can cause a startling rise in cancer cases.

Chemical by-products from the bomb explosions are present. Herbicides and other chemicals used in warfare, as well as chemical weapons, have long-lasting impacts. For Instance, During the 1962–1971 war, the U.S. used over 19 million gallons of "Agent Orange" in South Vietnam [25]. To help American troops find Communist troops, Agent Orange defoliated the jungles. Dioxin was present in Agent Orange. Recent research has revealed that Vietnam is still home to significant levels of dioxin, which have a detrimental effect on ecosystems and

human health. Cancer, birth abnormalities, and genetic alterations are all brought on by dioxins. Vietnamese blood still contains significant amounts of dioxin. In addition, the quick decline in vegetation led to severe soil erosion, nutrient depletion, and a significant decrease in animal numbers owing to habitat loss.

#### 4.4 Climate Change

The most significant oil leak ever caused by humans occurred in 1991 when Iraqi forces damaged over 700 oil wells and dumped 10 million gallons of crude oil into the country's streams and deserts. Nine million mines were reportedly planted in Kuwait by the Iraqi forces. Even though the conflict has long since ended, the ecosystem continues to suffer [26].

#### 4.5 Environmental Refugees

Landmine contamination drives people out of their customary lands and into refugee camps because mines are frequently positioned in regions where people live and work. Refugees who are unable to return to their polluted grounds are frequently forced onto previously undeveloped or marginal territory, placing them in danger [27]. More strain on already delicate ecosystems. Mine contamination interferes with traditional subsistence farming and forces societies into urban settings, contributing to crowded housing, jam-packed traffic, unemployment, air and noise pollution, and other issues.

### 5. THE IMPACT OF DRONE WARFARE ENVIRONMENT

In the 1930s, the word "drone" first appeared. It's thought to have started with the "Queen Bee" radio-controlled aircraft, the first reusable and returnable UAV created in the UK for air and navy gunnery training [28]. Today, several governments outside of the United States prefer not to use the term "drone" since it has come to represent morally problematic "killing machines" that are accountable for killing innocent individuals. This directly affects media coverage of the American program for weaponized drones [28]. In addition to defense and security, the technology is used in various sectors for civic purposes, including agriculture, the media, catering, private security, law enforcement, conservation, and environmental monitoring. Indeed, drone use is anticipated to have a

massive impact on precision agriculture, the efficient use of water and land, and the monitoring of crops and livestock [29]. Drones are now employed to distribute medications in places like Maseru in Lesotho, where roads are poor and underdeveloped. In addition, they are used to keep track of orang-utan populations in Indonesia, hunt poachers in Kenya, observe traffic jams in the US, inspect infrastructure (such as by looking for leaks in oil pipes and breaks in power lines or levees), take pictures of homes for real estate agents, patrol the US-Mexico-Canada border for illegal immigrants, survey building sites, coalfields, and archaeological sites, and fight a variety of other battles [28].

These new gadgets result from numerous technological advancements, many of which were made for smartphones and tablets. As battery technology advances, drones have more power, lift, range, and endurance [30]. The electronics that power today's cameras are quick, clever, small, and competent. Advancements have also influenced the development of these gadgets in hyper miniaturized sensors, accelerometers, gyroscopes, magnetometers, ultrasound altimeters, and robotic control systems. Robots seem to function better in the air because there is less friction from ground motion.

The development of drones is seen by many who support drone warfare as a natural technological advancement that is both welcome and rational. Given that we live in a quickly advancing technology advancement and an environment of economic austerity where there is a constant desire to deliver more for less money, many people also view drones as inevitable. This cost includes both financial and human life costs.

It is complicated to determine whether deploying armed drones is acceptable under international law [31]. First and foremost, international law lacks a central legislative body or supreme authority. The most reliable sources of international law are generally regarded as international treaties and state practices. However, the variety of factors that can be considered as sources of international law led to an abundance of authority, making setting a precedent difficult.

International law takes into account two dimensions of combat. The first question asks whether the reasons for fighting may be justified and refers to why you are fighting. The second

factor to consider is your method of combat, which looks at how ethically you are fighting. Regarding the first, the "why" you are fighting falls under the notion of "just war" theory, which is controlled by jus (or Jus) ad Bellum, the name given to the part of the law that establishes the legal justifications for a state's ability to wage war [30]. The law of international armed conflict is another name for it. It emphasizes specific standards that must be considered before engaging in any activity, such as authority, justification, right, and intention [30].

On the other hand, Jus in Bello is the set of laws that control how war is waged and takes effect once hostilities have started. Its goal is to prevent conflicts are conducted without regard to how or why they started or if the cause advocated by either party is just [28]. The International Committee of the Red Cross (ICRC) and academics who desire to underline their purpose of reducing the excesses of war and protecting civilians and other non-combatants use the words "Jus in Bello" and "international humanitarian law" interchangeably [29].

It is generally accepted that Article 57 codified existing customary law rather than creating a new norm. It now makes up a crucial part of international humanitarian law and is represented in the military manuals of the majority of states. The clause only really applies to the immediate aftermath of a military strike, not so much to any potential long-term repercussions on the environment, economy, or health. The moment an army objective is selected as a target that is proportionate to the threat, the standards outlined in Article 57 come into play. It is related to the principle of differentiation since it requires attackers to take all reasonable steps to confirm the target [29].

The variety of drones also provides exciting new developments in law enforcement strategies. The hummingbird is one illustration. As its name suggests, this drone is much smaller than a typical aircraft [29]. Due to its size, this drone would use stealth tactics to enter places that are too dangerous for law enforcement people. Drones like this may be sent inside a building to look for criminal behavior and listen in on a criminal plot, albeit in many cases, a warrant would be needed [1].

## 6. PROTECTION OF THE ENVIRONMENT UNDER INTERNATIONAL TREATIES

The 1980 Incendiary Weapons Protocol (Protocol III to the 1980 Convention on Certain

Conventional Weapons), the 1977 Additional Protocol I, the 1976 ENMOD Convention, and the 1998 Rome Statute of the International Criminal Court (ICC) are the four main international legal frameworks that specifically addresses how the environment should be protected under international humanitarian law (IHL) [32].

### 6.1 Article 35 (3) and 55, 1977 Additional Protocol I

In order to reinforce and advance international humanitarian law, Additional Protocol I to the four 1949 Geneva Conventions was drafted in Geneva between 1974 and 1977. (IHL). The Protocol combines Geneva's humanitarian law with the Hague's traditional conduct of hostilities rules to better protect those injured in armed conflict. Article 35(3) and Article 55 are two of the 102 articles of the Protocol that expressly address environmental protection in times of international armed conflict [32].

Article 35(3) provides that: *It is prohibited to employ methods or means of warfare that are intended or may be expected to cause widespread, long-term, and severe damage to the natural environment.*

Similarly, Article 55 Provides that: (1) *Care shall be taken in warfare to protect that natural environment against widespread, long-term and severe damage that is 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. And (2) Attacks against the natural environment by way of reprisals are prohibited.*

Relying on the legal proposition, both provisions attempt to protect the natural environment in the broadest meaning possible—including the air and sea environments—during an international armed confrontation. Article 55, deals with protecting the civilian, including civilian properties, and arguably aims to protect the environment as a civilian object, in particular, because of its importance for the health and survival of the civilian population. In contrast, Article 35(3) lays down a fundamental rule on means and methods of warfare and is intended to protect the intrinsic value of the environment. Therefore, the former provision is typically viewed as eco-centric, whereas the latter is viewed as anthropocentric. Both Articles 35(3)

and 55 of the 1977 Additional Protocol I. prohibits attacks on the environment that are not only intentional or direct but also those where it is conceivable that they would result in significant collateral environmental damage. In fact, the drafters of Articles 35(3) and 55 decided to include a cumulative damage threshold: widespread, long-lasting, and severe, which is contrary to the drafters of the 1976 ENMOD Convention. These provisions must be read under the general guidelines for interpreting treaties, which are embodied in Articles 31 and 32 of the 1969 Vienna Convention on the Law of Treaties since they were not specified (VCLT). However, determining the ordinary meaning of the terms extensive, long-lasting, and severe is a highly individualized task.

## 6.2 Use of Nuclear Weapons under Articles 35(3) and 55

Furthermore, it is crucial to determine how each provision would apply in the case of a new nuclear weapon use since Articles 35(3) and 55 of the 1977 Additional Protocol I are essential for protecting the environment during international armed conflict. It has been widely argued that 1977 Additional Protocol I is not, as such, applicable to the use of nuclear weapons. This is in addition to the fact that some states are not parties to the Protocol (for example, India, Israel, Pakistan, and the United States are not). This point was made in the general introduction to the Draft Protocols of the International Committee of the Red Cross (ICRC), which served as the framework for the negotiations in Geneva. The International Committee of the Red Cross (ICRC) stated in this introduction that it did not intend to "broach" (i.e., discuss) issues related to atomic, bacterial, and chemical warfare. It should be assumed that the Protocol's content applies to all types of weapons because it is generic and does not explicitly mention any particular weapon or weapon category. Additionally, there is disagreement among states, even those that are party to the Protocol, regarding whether the Protocol relates to the use of nuclear weapons. However, assuming that the new use of nuclear weapons would be covered by Articles 35(3) and 55 of the Protocol, it is likely that this use would violate both clauses. Although the damage caused by a nuclear explosion will depend on several variables, including the type of explosion (sub-surface burst, surface burst, or air burst), the type of atomic weapon used (fission/fusion weapon, enhanced radiation weapon), the environment in which the explosion occurs, and

the weather at the time of, and immediately after, the explosion, it is still likely that any nuclear explosion during a war will cause widespread, severe, and long-lasting damage.

## 7. ENVIRONMENTAL PROTECTION DURING ARMED CONFLICT ACCORDING TO CUSTOMARY INTERNATIONAL LAW

The environment is protected by three norms of customary international law, in addition to Articles 35(3) and 55: Rules 43, 44, and 45 of the ICRC's 2005 Customary International Humanitarian Law Study (CIHL).

According to Rule 43, the general principles of the conduct of hostilities apply to the natural environment.

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

### 7.1 Rule 43C: The Restriction on Severe Collateral Environmental Harm

A relatively recent application of the principle of proportionality is the prohibition on launching an attack against a military objective that may be anticipated to result in incidental environmental damage that would be excessive in comparison to the concrete and direct military advantage anticipated (or, in short, the prohibition on extreme environmental collateral damage).

### 7.2 Rule 44 States:

*Warfare strategies and tactics must consider the preservation and conservation of the environment. All practical precautions must be taken during military operations to prevent and, in any case, to reduce inadvertent environmental damage. A lack of scientific knowledge regarding some military activities' environmental impact does not excuse a party to the war from taking such safeguards.*

### 7.3 Rule 45 States:

*It is forbidden to use tactics or weapons in a war designed to harm the environment severely, widely, or for an extended period of time. It is forbidden to use environmental destruction as a weapon.*

This section only addresses the definition and application of Rules 43C and 44 because it is extremely unlikely that nuclear weapons would ever be deployed without (imperative) military necessity and because their use for the sole purpose of causing environmental harm is also extremely rare. The first sentence of Rule 45 broadly reflects Articles 35(3) and 55 and states that, in the opinion of the ICRC, both provisions have evolved into rules of customary international law. The United States is a persistent objector to the first sentence of the customary practice generally, and France, the UK, and the United States are persistent objectors to applying the first sentence of the rule to the use of nuclear weapons.

The Treaty and customary prohibitions on the excessive collateral damage to civilians and civilian property as stated in Article 51(4) and (5)(b) of 1977 Additional Protocol Rule 14 of the ICRC's CIHL Study and I appear to be complemented by the prohibition on the excessive collateral damage to the environment.

Rule 14 states that it is against the law to launch an attack that could result in incidental civilian casualties, civilian injuries, civilian property damage, or a combination of these. It would be excessive, given the anticipated concrete and direct military advantage.

The 1977 Additional Protocol I's Articles 35(3) and 55 are unmistakably the inspiration for Article 8(2)(b)(iv), which relates to those provisions in Articles 51(4) and (5)(b). It seems to link the Protocol's provisions for protecting the environment with protecting civilian property.

This conventional prohibition on excessive collateral environmental harm for government parties to 1977 Additional Protocol I complete Articles 35(3) and 55 of the Protocol.

Rule 44: There is a customary obligation to protect the environment during armed conflict.

Rule 44, first sentence, seems to imply a general duty of care for the environment during the

armed conflict because it is customary to use means and methods of warfare with due regard to protecting the environment.

The ICRC recognized the emergence of a duty of care for the environment during the armed conflict from many sources, including treaties and other international instruments, state practice, and statements made in international organizations and conferences, as well as military manuals and other official documents. The US Commander's Handbook on the Law of Naval Operations states that military operations must be conducted with adequate consideration for environmental protection.

## 8. CONSERVATION IN AREAS OF ARMED CONFLICT AND TROPICAL FORESTS

In modern tropical history, war has been a pervasive and ongoing issue. Armed conflict arises under a wide range of social, political, economic, and environmental circumstances, and its effects on the usage and management of forests vary significantly between locations and conflicts. Armed conflict has several overwhelmingly detrimental effects on forest resources and conservation capacity. Negative - The numerous biophysical impacts of war include habitat destruction, a loss of species and biodiversity, elevated pollution levels, and harmful modifications to the ecosystem and human health. The ability of local people, protected area agencies, and non-governmental groups to carry out conservation operations can be significantly impacted by war and insecurity.

Whereas the Additional Protocol I provision limits the effect on the environment, ENMOD disallows certain modifications as a means of warfare. The operative provision is Article I.

1. *Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage, or injury to any other State Party.*
2. *Each State Party to this Convention undertakes not to assist, encourage or induce any State, group of States, or international organisation to engage in activities contrary to the provisions of paragraph 1 of the article.*



*Techniques and weapons of war. The main guidelines in this area are found in the 1907 Hague and 1949 Geneva Conventions, Additional Protocol I, and Chemical and Conventional Weapons Convention. It must be underlined that this second tier of treaty law fills any gaps left by the environment-specific regulations, the supplementary protocol I, and ENMOD, lest they be dismissed as incidental.*

*Many provisions in the Fourth Hague Convention have significant (though, in some cases, only incidental) effects on military operations that have an environmental impact. Three are frequently mentioned as having normative significance in the context of the environment. The most extensive use is made of Article 23(g).*

Article 55 of Hague IV, which mandates that a belligerent occupying enemy territory conserve public structures, real estate, forests, and agricultural estates in conformity with usufruct laws, is the second clause that guarantees consequential environmental protection.

This principle permits the occupying power to use the property but forbids any long-term modification or destruction. Therefore, an occupier may lawfully utilize natural resources in an occupied territory, but they cannot do it in a way that is irresponsible or malevolent.

Marginal degree of protection. The provision found in the 1949 Geneva Conventions considered most applicable to the environment is Article 53 of the Fourth Convention.

*Article 53. Any destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, to the State, to other public authorities, or social or cooperative organizations is prohibited, except where such destruction is rendered absolutely necessary by military operations.*

Like Article 23 (g) of Hague IV, it codifies the principle of military necessity; it is also, as with Hague IV Article 55, limited to actions of an occupier in occupied territory.

It is the fact that pursuant to Article 147 of Geneva IV, violations of Article 53 constitute „grave breaches" whenever the destruction caused is extensive, unjustified by military necessity, and carried out wantonly.

Like its progenitors of 1949, Additional Protocol I contain numerous provisions that provide indirect, though substantial, environmental safeguards. For instance, Article 35 (1), expresses the customary law limitation on the right of belligerents to choose methods or means of warfare, Article 35 (2) proscribes actions causing unnecessary suffering, and Article 51 forbidding indiscriminate attacks,<sup>43</sup> all furnish environmental protection in specific contexts.

Articles 52, 51 (5) (b), and 57 are the key parts of treaty law addressing environmental issues. Whereby Article 52 prohibits making civilian property "object of attack or retaliation." The term „civilian object" can reasonably be interpreted as including all components of the environment - land, air, flora, fauna, atmosphere, high seas, etc.

Article 51. Protection of the civilian, among others, the following types of attacks are to be considered as indiscriminate: an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive concerning the concrete and direct military advantage anticipated.

Article 57. states that the following precautions shall be taken: refrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive to the concrete and direct military advantage anticipated.

The first is Article 54(2), which protects particular objects deemed indispensable to civilian survival. It is prohibited to attack, destroy, remove or render useless objects indispensable to the civilian population's survival, such as foodstuffs and agricultural areas for the production of food, crops, livestock, and drinking water (all are part of the environment).

Article 56: deals with the protection of Dams, dykes, and nuclear power plants which prohibits military operations to such destruction. Chemical Weapons Convention, and Conventional Weapons Convention. To different degrees, these treaties limit the use of environmentally harmful weaponry - chemicals (including herbicides), biologicals, mines, booby traps, and incendiaries.

## 9. UKRAINE WANTS RUSSIA TO PAY ENVIRONMENTAL DAMAGES

Ukraine is the first European state after the second world war experience destruction of the environment by war and armed conflict. The destruction that Ukraine has sustained throughout the war with Russia is nearly incomprehensible. In addition to the thousands of homes and apartment buildings that have been shelled and the billions of dollars worth of infrastructure that has been destroyed, more than 6,000 civilians have also died. The war's effects on the environment have also negatively impacted local ecosystems and human health. While the conflict continued, massive forest fires erupted, and chemical leaks into rivers and groundwater were triggered by attacks on industrial and fuel installations. Practically it is difficult to measure environmental damages that arise out of the war. However, based on the principles of polluter pay, principles polluter has to pay compensation for the environmental damages.

Under International Law, there are instances that the UN has ordered compensation for environmental damages; for instance, The United Nations Security Council voted in the early 1990s to order Iraq to pay Kuwait reparations, [33] "including environmental damage," which ultimately amounted to around \$3 billion of Iraq's \$52 billion post-war financial commitment. (Iraq makes final reparation payment to Kuwait for 1990 invasion | UN News, 2022) Accordingly, Iraq has obliged with the commitment. Similarly, Ukraine uses the precedent established for Iraq and Kuwait; Ukraine intends to make a claim in international court that will likely be much larger because rebuilding the nation will cost close to \$350 billion, according to a World Bank, the Ukrainian government, and EU Commission report. Documenting the environmental damage caused by the war is one thing; figuring out the cost of that damage so Ukraine can hold Russia accountable is quite another [34]. Claiming compensation for environmental damage is complicated due to the diplomatic and legal hurdles. Interestingly, the Ukraine government has created many instruments to track the environmental damage as early as the beginning of the war [35]. A variety of evidence has been gathered by specialised units, including pictures, videos, satellite photographs, and, when available, air and soil samples for laboratory analysis. The process of creating methodologies for estimating the financial costs of

environmental degradation has started. The Ukrainian authorities estimate that 900 of their protected natural areas have been harmed due to Russian military activity and that 1.2 million hectares, or nearly 30% of all their protected areas, suffer from the repercussions of conflict [36]. The "Environmental Safety group," which was formed to create ideas for the Plan, highlighted five priority areas [37]:

- i. improving public environmental administration;
- ii. addressing climate change and developing adaptation strategies;
- iii. ensuring environmental safety and efficient waste management;
- iv. ensuring sustainable use of natural resources; and
- v. preserving natural ecosystems and biological diversity and restoring and expanding protected areas.

A Post-War Recovery and Development Plan for Ukraine is now being created by the National Council for Recovery from the war [38]. The Plan's development is based on the exceptional institutional capability and cooperation displayed by Ukrainian authorities at all levels, municipalities, enterprises, and civil society [36]. Finally, In order to ensure strong administrative capacity to plan and carry out environmentally sustainable reconstruction efforts and to deliver regulation in a transparent, skilled, risk-based, and outcomes-focused manner, Ukraine should also keep modernising its environmental institutions at the national and subnational levels.

## 10. AFGHANISTAN AND RUSSIAN WAR

Afghanistan has experienced the longest war in the history of mankind; in the case of Afghanistan, the Russian invasion in 1979 caused significant environmental damage but has gone unpaid [39]. The main factor behind Moscow's ability to escape the liability for war crimes and environmental liability is Afghanistan's political instability. After Russia left Afghanistan, Mujahideen fought each other, then Taliban 1.0 captured Afghanistan; subsequently, the USA invaded Afghanistan, and finally, Taliban 2.0 once again took power. It is absolutely twilight and puzzles of politics and war.

The war has not spared the natural resource in Afghanistan, the ecology, or the infrastructure [40]. It has resulted in extensive and severe damage, with immediate and long-term effects on human health and ecological systems, to

forests, terrestrial and industrial facilities, transportation infrastructure, homes, and infrastructure for managing water, sewage, and waste [40]. Woods have been burned down as a result of shelling and Russian forces' abuse, and many of these fires left behind military equipment that had either been destroyed or abandoned [41]. Exposure to dangerous compounds found in the ammunition residues, which seep poisonous substances into the soil and damage the quality of surface and groundwater, poses a direct risk to human health. Heavy metals associated with weapons, energetic substances including trinitrotoluene (TNT), hexogen (RDX), and propellants from missiles and rockets pose risks [2]. For instance, Soviet special forces attacked the Tadz-Bek Palace on the southern outskirts of Kabul that evening on December 27, 1979. Their goal was to assassinate Afghan President Hafizullah Amin [42]. Additionally, Russia has destroyed Afghanistan's environment; the International Court of Justice must act impartially and try Russia and USA with its allies for environmental damages in Afghanistan.

## **11. COMPENSATION FOR ENVIRONMENTAL DAMAGE UNDER INTERNATIONAL LAW**

It will be helpful to consider the comprehension of environmental damage and study compensating strategies. According to some, public international law neither defines environmental harm nor offers any recommendations on how it should be evaluated [14]." That position is unlikely to alter without research into national and state legislation and practice. There is some guidance to be found in many international traditional and judicial sources, and it is clear that definitions of environmental harm and pollution are moving toward an ecosystem's perspective [43].

The ICJ has established a three-step process for calculating the amount of compensation due through its case law. These three criteria are: [43] The first criterion is that a State has been harmed; the second is that there is a direct causal connection between the unlawful act of the responsible State and the harm to the injured State, and the third is the compensation to be paid.

### **11.1 Calculating the Compensation Amount**

The loss is typically determined by taking into account (1) compensation for capital value, (2)

compensation for loss of profits, and (3) compensation for incidental expenses where property rights have been harmed by the wrongdoing of another State. Typically, a property's "fair market value" serves as the foundation for calculating its capital value. The ICJ has also affirmed that compensation is given based on the parties' submissions and has stated a preference for separate hearings so that it can hear testimony about the amount of compensation that should be given.

The International Court of Justice (ICJ) in the American diplomatic and consular staff in Tehran declared that the US had a right to compensation from Iran but that the form and amount of that compensation would need to be decided in a separate action.

The decision of the ICJ in its Question of Compensation (Costa Rica v. Nicaragua) [44] case of 2 February 2018 provides a pioneering example of damage to the environment being litigated before an international tribunal. The judgment is the first time that the ICJ has adjudicated compensation for environmental damage, and it is only the third time the ICJ has awarded compensation at all. Nevertheless, the ICJ boldly asserted in this case that 'damage to the environment, and the consequent impairment or loss of the ability of the environment to provide goods and services, is compensable under international law[45,46].'

Following the 1990–1991 Gulf War, the UN Security Council resolution 687 (1991), under which claims for monetary compensation for environmental destruction were made. Environmental claims, also known as F4 claims, were assessed by a commissioners' panel that had been specifically put together. According to the Security Council resolution, Iraq is liable under international law for any direct loss or damage resulting from its unauthorized invasion and occupation of another country, including environmental destruction and the depletion of natural resources.

The UNCC attempted to characterize environmental harm even though the Security Council found it impossible. By 2005, the UNCC had evaluated all 2.7 million applications and paid out a total of USD48.7 billion in compensation claims after awarding USD52.4 billion to around 1.5 million successful claimants. Iran, Jordan, Kuwait, and Saudi Arabia received about USD 4.3 billion from the UNCC for

environmental rehabilitation and restoration claims. The knowledge gained by the UNCC can be used to improve how ecological compensation is handled in the future.

States that were impacted demanded compensation for environmental harm. The Commissioners who decided on the various claims were unbiased professionals who worked apart from the UNCC Governing Council, a political entity. Each Commissioner on a panel, made up of three people, represented a different nationality. The Panel looked into the written arguments put forth by the various claimants and Iraq's responses at various points in the procedure.

Additionally, the Panel had the right to request clarification from the claimants and request the submission of expert opinions from consultants the UNCC had hired. The latter contained site visit reports. Additionally, oral sessions were held, giving the claimants and Iraq one more chance to present their cases. Claimants had to provide "documentary and other acceptable proof adequate to substantiate the circumstances and amount of the alleged loss" for their claims to be accepted. Sometimes claimants fail to satisfy these criteria. Turkey, for instance, was unsuccessful in its allegation that an inflow of refugees had harmed its forests. The Panel noted that it was unable to prove a cause-and-effect relationship because Turkey had not provided enough information, such as "the dates on which the refugees arrived in Turkey, the duration of their stay, or the nature of the damage that they are alleged to have caused."

Over a billion barrels of oil were released in Kuwait where Iraq blew up over 700 oil wells and contaminated groundwater and ecological systems, in addition to damage from military operations, for notifications, and mines left by Iraqi forces. These damages included approximately 10.8 million barrels of oil spilled into the sea by the Iraqi military, which contaminated the coastline of Saudi Arabia, with around 6 million barrels of oil burning for almost months, and over a million barrels of oil burning for nearly a year. Compensation was sought for the expense of removing pollution, repairing harmed ecosystems, and monitoring public health and the environment.

## **12. STATE SPACE LIABILITY CONVENTION, COMPENSATION**

According to the 1972 Convention on International Liability for Damage Caused by

Space Objects (Space Liability Convention), States that launch, procure the launch of, or whose territory has been used for the launch of a space object are completely liable for any harm done to the earth or aircraft. Damage is referred to as the loss of life, bodily injury, impairment of health, loss of, or property damage under the Space Liability Convention.

## **13. CONCLUSION**

For more than ten years, scientists and security experts have warned that global warming could pose a threat to national security. They predict that the effects of global warming rising oceans, strong storms, starvation, and decreased access to fresh water could lead to political instability in some parts of the world and mass migration and refugee crises. Some fear that battles may come next.

Due to the changes in the geography brought on by trench combat, World War I had the most detrimental effects on the ecosystem. Trench digging resulted in soil churning, crushing of plants and animals, and trampling of grassland. Logging in the forest to create more trenches caused erosion. Due to the severity of the environmental effects of World War II, they have persisted through the Cold War era and into the present. Conflict, chemical poisoning, and aerial bombardment all have an effect on the population of the world's flora and fauna, which also reduces the diversity of species. Many new technologies were developed during the Vietnam War, some of which were responsible for the ecological transformation of Vietnam from a once-pristine habitat to an almost apocalyptic state after the war. These technologies included methods for chemical deforestation.

One of the biggest oil spills in history occurred during the Gulf War in 1991. An advantage was to be gained by deflecting air strikes by destroying the underground natural oil wells in order to produce smoke. Due to the greenhouse gases they released, Kuwaiti oil fires significantly reduced air quality. There have been numerous environmental effects of Russia's recent invasion of Ukraine. Wars are inherently dangerous and brutal. More catastrophic harm can occasionally be caused by resource destruction than by bombs and gunfire. The destruction of farms, livestock, gardens, land, and other civilian infrastructure is leading to food shortages, severe disruption of economic activity, a threat to means of survival, impeding the lives of humans

and all wild species, and causing displacement, starvation, and death due to threatened food security and other.

## COMPETING INTERESTS

Author has declared that no competing interests exist.

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