

*Imperative of Environment Preservation amidst Warfare: Navigating Contribution into the Equation of Safeguarding First and Second Generation Human Rights*

**IMPERATIVE OF ENVIRONMENT PRESERVATION AMIDST WARFARE:  
NAVIGATING CONTRIBUTION INTO THE EQUATION OF SAFEGUARDING  
FIRST AND SECOND GENERATION HUMAN RIGHTS**

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**Abstract:** Environmental destruction and resource depletion during armed conflicts are unfortunately widespread. Pollution, deforestation, and habitat degradation following war can have long-term environmental repercussions. Despite the proliferation of various international conventions and treaties specifically designed to protect the well-being of civilians, combatants, and other vulnerable individuals affected by armed conflicts, it is evident that the preservation of the environment has not received commensurate priority. The research examines environmental neglect and resource depletion during conflicts in light of humanitarian and human rights concerns. This paper comprehensively examines the multifaceted mechanisms that adversely impacts environments during times of conflict. Moreover, it established a compelling correlation between these destructive processes and the severe infringement upon human rights, specifically in terms of the deprivation of essential resources necessary for individuals to lead a dignified and sustainable post-war existence, as well as explores potential solutions and offering recommendations to foster a sustainable future.

### **A. INTRODUCTORY DISCUSSION**

The survival and well-being of the human species are intricately linked to the natural environment, commonly referred to as Mother Nature. Since the inception of human existence, our species has heavily relied on the resources and services provided by the nature. This interdependence has shaped the course of human development, and therefore, the escalating environmental crisis poses a significant threat that has the potential to rapidly transform into a pressing humanitarian crisis. By delving into the pages of history, it can be witnessed that the conflicts in Afghanistan have resulted in widespread deforestation and significant destruction

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to the local species.<sup>1</sup> The outbreak of war in Ukraine has had far-reaching consequences, causing substantial destruction and loss of life due to extensive bombardment, and has tragically impacted not only human populations but also various migrant species, which sheds light on the urgent need for conservation efforts and the mitigation of conflict-related harm to the environment.<sup>2</sup> The repercussions of these conflicts have had far-reaching and devastating effects, leaving subsequent generations grappling with the arduous task of recovering from the extensive damage inflicted. There is a strong interrelation between human rights and the environment, as the interdependence between the environment and various aspects of human life, such as food, clothing, and medicine,<sup>3</sup> is a complex and interconnected relationship. This research aims to delve into the amplification and multiplication of these issues, shedding light on the interchange among environmental degradation, conflict, and their detrimental effects on nature. The study investigates the suitable parameters for detecting environmental damage and proposes potential solutions to address the current challenges faced in this field of research.

This study addresses the issue of insufficient environmental preservation during wartime, a major human rights concern due to the interconnectedness of the environment and human rights. Despite strong legal frameworks, the environment is vulnerable to global armed conflicts. Conflicts are often prioritised over their environmental impacts by the global community. Lack of effective environmental law enforcement and insufficient willingness by nations to incorporate environmental factors into military strategy may jeopardise ecological balance. Individuals will be affected across multiple domains, as will plants, animals, and the biosphere. Food scarcity, natural disasters, water shortages, inadequate medical resources, and other issues may cause post-war fatalities. Armed conflicts that degrade the environment violate humanitarian law and human rights. Environmental preservation and human rights must be linked, and a strong framework must be established to protect them. A lack of court cases has been seen, leading to challenges in enforcing relevant laws. Hence, the significance of

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<sup>1</sup> John Alan Cohan, 'Modes of Warfare and Evolving Standards of Environmental Protection Under the International Law of War' (2003) 15 Florida Journal of International Law.

<sup>2</sup> Peter Dickinson, 'Russian Bombardment of Ukraine's Power Grid May Force Millions to Flee' (*Atlantic Council*, 23 April 2024) <<https://www.atlanticcouncil.org/blogs/ukrainealert/russian-bombardment-of-ukraines-power-grid-may-force-millions-to-flee/>> accessed 10 May 2024.

<sup>3</sup> 'About Human Rights and the Environment' (*OHCHR*) <<https://www.ohchr.org/en/special-procedures/sr-environment/about-human-rights-and-environment>> accessed 10 May 2024.

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these provisions and the efficacy of the protection they afford in practical terms appear to be constrained.<sup>4</sup>

## B. CONCEPTUAL ANALYSIS

Insufficient environmental preservation during wartime is a major human rights concern due to the interconnectedness of the environment and human rights. Despite the existing legal frameworks, the environment is vulnerable to global armed conflicts. The global community often prioritizes conflicts over their environmental impacts.

### *1. Environment Preservation and Crimes against the Environment*

The profound essence of ‘environment’ encapsulates the intricate amalgamation of natural elements that deeply interweave to compose the tapestry of our planet's ecosystem.<sup>5</sup> According to the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, the term ‘environment’, refers to the living resources of international watercourses, the flora and fauna that depend on those watercourses, and the amenities associated with them<sup>6</sup> and as per the International Law Commission, environment might be interpreted differently for various purposes, and it is crucial to remember that there is no single, widely recognised definition of it.<sup>7</sup> The environment is a harmonious tapestry of substances and organisms that shape the essence of existence. It also includes the harmonious cohabitation of the animal and plant worlds. Nature’s symphony nurtures our environment's delicate equilibrium through wetlands, lakes, and rain.<sup>8</sup> The interdependence between the global economy and human well-being is closely linked to the state of the environment.<sup>9</sup> Preservation prevents deleterious activities that threaten the environment. The global human population

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<sup>4</sup> Barriser Ahmed Ehsanul Kabir and Barrister Shuvra Chowdhury, *Introduction to International Humanitarian Law* (4th edn, Sufi Prokashoni 2022).

<sup>5</sup> John Alan Cohan, ‘Modes of Warfare and Evolving Standards of Environmental Protection Under the International Law of War’ (2003) 15 *Florida Journal of International Law* 5.

<sup>6</sup> ‘Remedying the Environmental Impacts of War: Challenges and Perspectives for Full Reparation’ (*International Review of the Red Cross*, 1 December 2023) <<http://international-review.icrc.org/articles/remedying-the-environmental-impacts-of-war-924>> accessed 11 May 2024.

<sup>7</sup> ‘Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities, with Commentaries (2006)’ (International Law Commission 2006) II, Part Two. <[https://legal.un.org/ilc/texts/instruments/english/commentaries/9\\_10\\_2006.pdf](https://legal.un.org/ilc/texts/instruments/english/commentaries/9_10_2006.pdf)> accessed 12 May 2024.

<sup>8</sup> *ibid*

<sup>9</sup> Elijah A. Akintunde, ‘Theories and Concepts for Human Behavior in Environmental Preservation’ (2017) 01 *Journal of Environmental Science and Public Health* 120.

stood at approximately one billion in 1800<sup>10</sup>. The current global population has surpassed the threshold of seven billion.<sup>11</sup> The development of the human population has increased demand for water, food, timber, and other environmental resources, therefore raising the tendency for environmental crimes.<sup>12</sup>

Environment crimes are purposeful activities perpetrated during armed conflicts that destroy the natural environment. These acts may intentionally destroy or deteriorate coastal and terrestrial ecosystems, species, habitats, and resources that humans, animals, and plants require for sustenance.<sup>13</sup> According to the Rome Statute, crime against the environment is defined as the willful employment of methods or tactics of combat with the malicious aim of harming the natural surroundings.<sup>14</sup> The clarification specifies that ‘widespread’ pertains to an area spanning at least one hundred square kilometres, ‘long-term’ denotes the duration of one or additional seasons, and ‘severe’ indicates significant disruption or injury.<sup>15</sup>

## ***2. The Evolution of Three Generations of Human Rights***

The ‘Three Generations of Rights’ refers to categorising human rights into three distinct generations based on their historical development. These generations are commonly referred to as first-generation, second, and third-generation rights.

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<sup>10</sup> ‘Preservation’ (Education) <<https://education.nationalgeographic.org/resource/preservation>> accessed 5 November 2023.

<sup>11</sup> *ibid.*

<sup>12</sup> *Ibid.*

<sup>13</sup> S Freeland, ‘Addressing the Intentional Destruction of the Environment during Warfare under the Rome Statute of the International Criminal Court’ (2015) <<https://cris.maastrichtuniversity.nl/en/publications/addressing-the-intentional-destruction-of-the-environment-during->> accessed 15 November 2023.

<sup>14</sup> ‘Rome Statute of the International Criminal Court’ (OHCHR) <<https://www.ohchr.org/en/instruments-mechanisms/instruments/rome-statute-international-criminal-court>> accessed 10 May 2024.

<sup>15</sup> Freeland (n 13).

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<b>Generation of Human Rights</b>	<b>Categorized Rights</b>	<b>Background of Categorization</b>	<b>Laws Mentioning These Rights</b>
First Generation	Civil and Political Rights	As a response to government oppression and individual independence, originated in the 17th and 18th centuries.	UDHR, ICCPR, ECHR
Second Generation	Economic, Social and Cultural Rights	Emerging in the 19th and 20th centuries, addressing socioeconomic inequality and promoted the welfare of individuals.	ICESCR, ILO.
Third Generation	Solidarity rights, collective rights. Ex- Right to a healthy environment	It sprouted in the late 20th century and focused on self-determination, ethnicity, and environmental sustainability.	Declaration on the Right to Development, UNDRIP

*Table 1: Three Generations of Human Rights<sup>16</sup>*

The historical progression of human rights is occasionally associated with three generations, signifying three distinct phases in their advancement. First-generation rights refer to the political and civil rights that primarily focus on safeguarding people's freedom from state intervention.<sup>17</sup> The concept of rights of the second generation pertains to economic, social, and cultural rights that necessitate proactive state intervention to foster the welfare of its citizens.<sup>18</sup> Third-generation rights encompass collective or developmental rights.<sup>19</sup> Developing nations,

<sup>16</sup> 'The Evolution of Human Rights' (*Council of Europe*) <<https://www.coe.int/en/web/compass/the-evolution-of-human-rights>> accessed 15 December 2023.

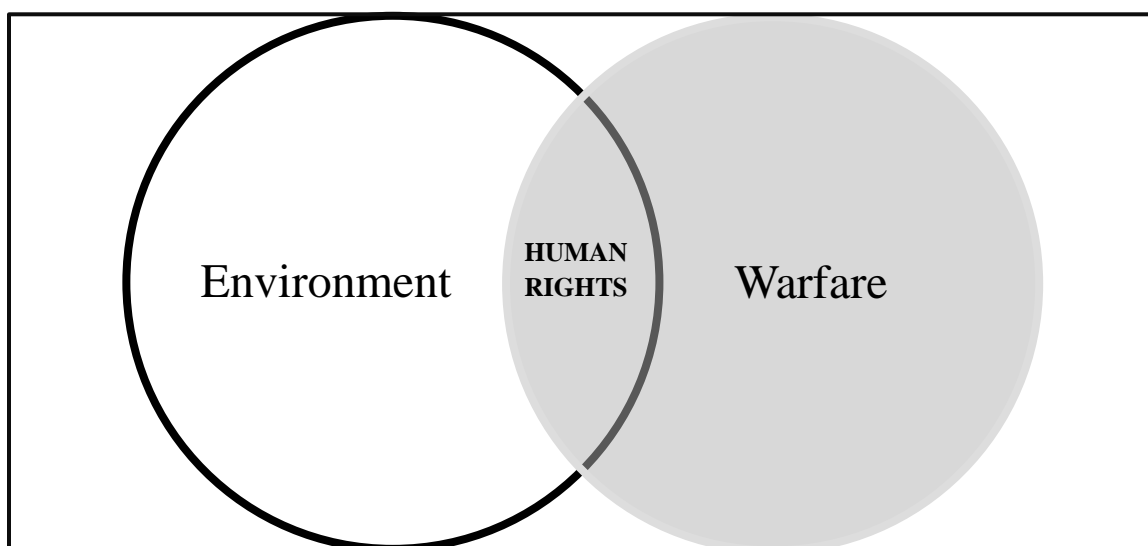
<sup>17</sup> *ibid.*

<sup>18</sup> Abdullah Al Faruque, *International Human Rights Law: Protection Mechanisms and Contemporary Issues* (2nd edn, New Warsi Book Corporation 2015) 15.

<sup>19</sup> *ibid.*

mostly, have formulated the aforementioned rights within the institutional structure of the United Nations as part of the decolonisation efforts initiated after 1945.<sup>20</sup> These recognised rights encompass the right to exercise self-determination, reside in a healthy and secure environment, receive humanitarian aid, and live in peace.<sup>21</sup> This generational category should not be perceived as contradicting the universality of human rights.<sup>22</sup>

### ***5. Relation among Environment, Warfare and Human Rights***



*Figure 1: Relation among warfare, environment and human rights*

Humans inhabit the environment and are endowed with inherent rights known as human rights from birth. Thus, the environmental rights and human rights nexus must be recognised, and the reluctance must end. In addition to daily pollution, man-made wars and destruction harm the ecosystem.<sup>23</sup> Any significant depletion of resources will harm the global financial system, reducing people's access to basic essentials and infringing their right to a standard existence.<sup>24</sup>

<sup>20</sup> *ibid.*

<sup>21</sup> *ibid.*

<sup>22</sup> *ibid.*

<sup>23</sup> Michael J Lawrence and others, 'The Effects of Modern War and Military Activities on Biodiversity and the Environment' (2015) 23 *Environmental Reviews* 443 <<https://cdnsiencepub.com/doi/full/10.1139/er-2015-0039>> accessed 10 May 2024.

<sup>24</sup> Bridget Lewis, 'Environmental Rights or a Right to the Environment: Exploring the Nexus between Human Rights and Environmental Protection' (2012) 8 *Macquarie Journal of International and Comparative Environmental Law* 36 <<https://heinonline.org/HOL/Page?handle=hein.journals/macqjice8&id=42&div=&collection=>> accessed on 9 December 2023.

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A notable example of this is Germany's involvement in World War II, where it played a role in the sinking of a ship, transporting a massive quantity of mustard gas, estimated at one million pounds<sup>25</sup>. This environmental disaster was of significant severity, as the toxic gas dissemination within the adjacent bodies of water implies that its impact may endure for a minimum of four centuries.<sup>26</sup> During another conflict, approximately 1,000 ships of Allied forces and Japan were destroyed or sunk. The sinking of gasoline-transporting ships in the Pacific Ocean caused widespread contamination. A hurricane hit in July 2001, fifty-seven years after the ship sank.<sup>27</sup> The island adjacent to the hazardous area was heavily polluted, damaging fishing and marine areas. Wars directly contaminate soil, reducing fertility and plant development.<sup>28</sup> Modern nuclear weapons contaminate the air with harmful compounds that may be transmitted to nature. The direct consumption of these natural plants or components can impact the human body.<sup>29</sup> The US military used pinpoint environmental manipulation to achieve operational aims throughout the Vietnam War.<sup>30</sup> To prevent communist forces from blending into nearby vegetation and creating small units, the US attacked forests and croplands with herbicides and other chemicals.<sup>31</sup> US soldiers also used Rome ploughs with enormous blades to clear approximately three-quarters of a million acres of woodland.<sup>32</sup> The above incidents significantly agitated food, medication, hospital supplies, safety, security, religion, and culture, affecting fundamental human rights.

### **C. SIGNIFICANCE OF PRESERVING ENVIRONMENT: EVOLUTION OF METHODS TO DESTRUCT ENVIRONMENT AS WAR STRATEGY**

Warring parties have long used the environment as a strategic tool. Conflicting parties exploit the environment to disrupt, intentionally disrupt, impede, or harm their adversaries. This

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<sup>25</sup> Dr. Enas Al-zahrani, 'The Effectiveness of International Humanitarian Law (IHL) in the Environmental Protection at Armed Conflict Areas', (2018) 69 *Journal of Law, Policy and Globalization* 55.

<sup>26</sup> *ibid.*

<sup>27</sup> *ibid.*

<sup>28</sup> *ibid.*

<sup>29</sup> *ibid.*

<sup>30</sup> John Alan Cohan, 'Modes of Warfare and Evolving Standards of Environmental Protection Under the International Law of War' (2003) 15 *Florida Journal of International Law* 7.

<sup>31</sup> *ibid.*

<sup>32</sup> *ibid.*

discussion seeks to explain the importance of protecting the environment and the history of warfare methods from prehistoric times to the present while also considering possible future developments.

### ***1. Significance of Preserving Environment in Light of International Environmental Laws***

Preserving the environment yields numerous advantages. It enables the establishment of eco-tourism, organic agriculture, and sustainable forestry, all of which are profitable enterprises.<sup>33</sup> Additionally, ecotourism aids in managing ecosystems and biodiversity, resulting in enhanced quality of life and sustained well-being.<sup>34</sup> Prudent administration of natural resources results in enhanced sustainability for society and the economy at many scales, ranging from local to worldwide. In addition, environmental conservation contributes to retaining soil and water, both of which are crucial natural resources. The konghae issue of North Korea can be regarded as an illustrative case. North Korean konghae rhetoric developed in the 1970s during the Cold War and developmentalism.<sup>35</sup> North Koreans refer to pollution as konghae (公害), which includes the negative effects of industrialisation, urbanisation, and societal factors on human health and the environment.<sup>36</sup> North Korea compared it to nuclear weapons, as environmental contamination was so severe that in the 1980s and 1990s, environmental initiatives were made.<sup>37</sup>

The Convention on Biological Diversity requires member nations to implement emergency national responses in the event of biodiversity threats, regardless of whether the threat is man-made or natural. In such cases, joint contingency plans and international cooperation are promoted, which invariably point to the purpose of the convention to protect the environment in the occurrence of armed conflicts.<sup>38</sup> Principle 15 of the Rio Declaration stipulates that states should adopt a precautionary approach to environmental protection in

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<sup>33</sup> Marina Angelova Nikolova, 'The Need to Evaluate Ecosystem Benefits' (2015) 25 Бизнес управление 61 <<https://www.ceeol.com/search/article-detail?id=418479>> accessed 30 November 2023.

<sup>34</sup> John F Considine and others, 'Environment Preserving Cloud Migration and Management' <<https://patents.google.com/patent/US8417938B1/en>> accessed 30 November 2023.

<sup>35</sup> Eunsung Cho, 'The Environment in the Box of Cold-War Developmentalism: North Korea's 1970s Discourse on Pollution (Konghae)' (2023) 28 International Journal of Korean History 101.

<sup>36</sup> *ibid.*

<sup>37</sup> *ibid.*

<sup>38</sup> The Convention on Biological Diversity 1993, art 14.



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situations where severe or irreversible damage is imminent.<sup>39</sup> Moreover, principle 24 mandates that the destructive nature of warfare towards sustainable development is inherent. Hence, nations must adhere to international environmental protection laws during periods of warfare and collaborate as required to advance environmental protection.<sup>40</sup> Although warfare is not explicitly referenced, the document offers a precautionary principle-based guideline to prevent environmental devastation during armed conflict. The Oil Convention delineates strategies to address and mitigate oil pollution incidents, including those that may transpire during armed conflicts. The convention strictly forbids the release of oil into the marine environment irrespective of the discharge's intentionality or inadvertence, and it mitigates oil pollution.<sup>41</sup> All these environmental conventions and declarations passively aim to mitigate environmental pollution occurring from warfare.

## ***2. Environment Destruction as a War Strategy***

Human activity has always affected the environment. They have used countless tactics to twist, abuse, and control the environment to satisfy their need for power or triumph over rival states. Gunshots are usually heard before seen. However, weapons will likely release tiny metallic particles like lead into the environment. Due to their low mass, these particles can disperse with the air they were blended with and permanently integrate into it.<sup>42</sup> Millions of bullets are fired in modern conflict. Hand grenades, tiny explosives, and cluster bombs collectively contribute to the dissemination of aerial pollutants. Bombs and shell usage escalated in the 20th century. This rising trajectory peaked with 'carpet bombing' or 'strategic bombing', a unique warfare strategy that arose before World War II.<sup>43</sup> The 1925 Geneva Gas Protocol was being violated as chemical weapons were used in minor conflicts before World War II.<sup>44</sup> Fire has been crucial in many confrontations throughout history, demonstrating its versatility.

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<sup>39</sup> Rio Declaration on Environment and Development 1992.

<sup>40</sup> *ibid.*

<sup>41</sup> International Convention for the Prevention of Pollution of the Sea by Oil 1954.

<sup>42</sup> Dr Ramesh and Sayed Qudrat Hashimy, 'Impact of War on the Environment: A Critical Study of Afghanistan' (2023) Volume I 52 IELRJ <[https://www.recountlesssearchgate.net/publication/372493252\\_Impact\\_of\\_War\\_on\\_the\\_Environment\\_A\\_Critical\\_Study\\_of\\_Afghanistan](https://www.recountlesssearchgate.net/publication/372493252_Impact_of_War_on_the_Environment_A_Critical_Study_of_Afghanistan)> accessed 8 November 2023.

<sup>43</sup> Desy Churul Aini and Desia Rakhma Banjarani, 'ENVIRONMENTAL PROTECTION IN ARMED CONFLICT ACCORDING TO INTERNATIONAL HUMANITARIAN LAW' (2018) 3 Tadulako Law Review 12 <<http://jurnal.untad.ac.id/jurnal/index.php/TLR/article/view/10364>> accessed 14 November 2023.

<sup>44</sup> *ibid.*

During World War II, advancements in fire-based warfare occurred, enhancing its combat effectiveness. Similarly, in World War I, air raids involving the strategy of carpet bombing led to the extensive development and deployment of incendiary bombs by all parties involved. Regrettably, chemical weapons inflicted numerous casualties and fatalities, primarily due to their design, which aimed to irritate, incapacitate, and cause environmental contamination.<sup>45</sup>

### ***3. The Evolutionary Progression of War Techniques and Environmental Disruption***

War goals, plans, and tactics have changed from medieval times to the present. These changes have had enormous effects on the surrounding environment. In contemporary times, governments purposely destroy the environment and deplete natural resources to inflict irreversible harm on their enemies. Like the 1998 Congo War that ruined national parks, spread HIV-AIDS, poached wildlife, and destroyed forests, among other environmental damage.<sup>46</sup> Furthermore, the Rwandan Civil War of 1994 had an impact on the depletion of natural resources, biodiversity, and the population fall of endangered species like African gorillas.<sup>47</sup> The conflict in the former Yugoslavia in 1991 had significant consequences on environmental contamination, specifically affecting water, air, and land quality, posing a threat to human survival.<sup>48</sup> Throughout history, there have been several instances where deliberate actions have been undertaken to damage the ecological system.

#### **a) Pruning Trees**

The deployment of atomic bombs by the United States in August 1945 demonstrated the immense destructive power of weapons advancement.<sup>49</sup> These bombings took place in the Japanese cities of Nagasaki and Hiroshima, leading to significant loss of life and extensive environmental devastation. Using herbicides like Agent Orange, the United States carried out "Operation Ranch Hand" with catastrophic results amid the Vietnam War to kill vegetation that the enemy exploited for cover and food<sup>50</sup>.

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<sup>45</sup> *ibid.*

<sup>46</sup> Desy Churul Aini and Desia Rakhma Banjarani, 'ENVIRONMENTAL PROTECTION IN ARMED CONFLICT ACCORDING TO INTERNATIONAL HUMANITARIAN LAW' (2018) 3 *Tadulako Law Review* 12 <<http://jurnal.untad.ac.id/jurnal/index.php/TLR/article/view/10364>> accessed 14 November 2023.

<sup>47</sup> *ibid.*

<sup>48</sup> *ibid.*

<sup>49</sup> Freeland (n 13).

<sup>50</sup> *ibid.*

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b) Destruction of Natural Resources

After the Gulf War, the Saddam Hussein government constructed levees and barriers that drained the al-Hawizeh and al-Hammar wetlands in southern Iraq, as payback for what it perceived to be the Marsh Arabs' support for an uprising against his administration.<sup>51</sup> This essentially wrecked the 500,000 Marsh Arabs' potential to make a living in the region of this habitat.<sup>52</sup> It destroyed a huge amount of livelihoods. The Iraqi Special Criminal Tribunal subsequently indicted Saddam Hussein and eleven other officials of his former administration on charges that were partially related to these crimes of environmental degradation.<sup>53</sup> Nevertheless, despite the Iraqi Special Tribunal Statute's explicit mention of environmental damage, they did not mention environmental crimes.<sup>54</sup> During the 14<sup>th</sup> century, resources were deliberately destroyed during the Anglo-Scottish wars via cattle raiding, agricultural destruction, soil erosion, and woodland destruction.<sup>55</sup>

b) Diminishing Wildlife and Biodiversity Hotspot

Wartime deposition of chemicals, heavy metals, and hazardous waste can lead to soil pollution, and pollution from war can have long-term negative effects on ecosystems, public health, and the environment as a whole.<sup>56</sup> These socio-economic impacts diminish the ability of the government to conserve biodiversity, which refers to the overall societal capacity to prioritise and allocate resources for this purpose.<sup>57</sup> For example, the Gorongosa National Park in Mozambique, located in East Africa, was utilised as a combat zone by both government and rebel groups during the period from 1977 to 1992.<sup>58</sup> It was discovered that these conflicts caused significant destruction to the populations of large mammals within the park. By the

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<sup>51</sup> *ibid.*

<sup>52</sup> *ibid.*

<sup>53</sup> *ibid.*

<sup>54</sup> *ibid.*

<sup>55</sup> Lucia Wirthová, 'From Kuwait to Ukraine: Conflict's Implications on the Natural Environment and the Responses of International Humanitarian Law' (2023) 23 *International and Comparative Law Review* 117 <<https://www.sciendo.com/article/10.2478/iclr-2023-0006>> accessed 14 November 2023.

<sup>56</sup> Keith P McManus, 'Civil Liability for Wartime Environmental Damage: Adapting the United Nations Compensation for the Iraq War' 33 *Environmental Affairs*.

<sup>57</sup> 'Wars Kill Wildlife in Africa's Protected Areas, Study Finds' (*Mongabay Environmental News*, 11 January 2018) <<https://news.mongabay.com/2018/01/wars-kill-wildlife-in-africas-protected-areas-study-finds/>> accessed 28 November 2023.

<sup>58</sup> *ibid.*

early 2000s, there were only double or perhaps single digits of buffalo, hippos, wildebeest, and zebra, and the number of elephants had dropped by more than 75%.<sup>59</sup>

#### c) Water Pollution

Oil spills, the utter collapse of water treatment plants, and harmful substance contamination of water sources can all lead to water pollution.<sup>60</sup> Herodotus provided a detailed account of the events that occurred during the fifth century BC.<sup>61</sup> During this era, the Scythians engaged in a strategic military tactic known as scorched earth, when they deliberately contaminated water sources, in an attempt to impede the progress of the Persian army under the command of Darius. In the aftermath of the 2006 dispute between Israel and Lebanon, the Jiyeh power station was bombed, releasing approximately twelve thousand to fifteen thousand tons of fuel oil into the Mediterranean Sea.<sup>62</sup>

#### d) Land Pollution

In 146 BC, Roman military forces engaged in the deliberate destruction of the city of Carthage, resulting in its complete devastation. They also employed the method of soil poisoning in surrounding areas by applying salt.<sup>63</sup> The aim was to inhibit the fertility of the soil. During the American Civil Conflict 1861 to 1865, the French colonisation of Algeria from 1830 to 1847, the German retreat, and the Napoleonic conquest of Russia in 1812, as well as German retreats in World War II, all utilised the scorched earth strategy.<sup>64</sup>

#### e) Nuclear Weapon

Nuclear weapons can cause enduring impacts on the environment, encompassing the geosphere, the atmosphere, and the biosphere. A nuclear war might have devastating consequences on the environment, leading to the widespread devastation of fauna and vegetation caused by the effects of blast, heat, and radioactive radiation.<sup>65</sup> The process of

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<sup>59</sup> *ibid.*

<sup>60</sup> McManus (n 56).

<sup>61</sup> Freeland (n 13).

<sup>62</sup> 'The Environment and International Humanitarian Law | How Does Law Protect in War? - Online Casebook' <<https://casebook.icrc.org/case-study/environment-and-international-humanitarian-law>> accessed 24 November 2023.

<sup>63</sup> Freeland (n 13).

<sup>64</sup> Wirthová (n 55).

<sup>65</sup> Arthur H Westing, 'Environmental Impact of Nuclear Warfare' (2009) 8 *Environment Conservation* 269 <<https://www.cambridge.org/core/journals/environmental-conservation/article/abs/environmental-impact-of-nuclear-warfare/7788F2D423BDE0AD8146DBDA64D649C3>> accessed 29 November 2023.

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ecological progression after nuclear catastrophe would be a delayed progress and unpredictable, resulting in impaired regrowth of plants.<sup>66</sup> Nuclear weapons can be employed to achieve complete eradication of living species, causing disruption by explosion and heat radiation and resulting in the devastation of various ecosystems.<sup>67</sup>

f) Artificial Disaster Creation

The United States endeavoured to induce artificial rainfall using cloud seeding during the Vietnam War, which resulted in the formation of the ENMOD Convention and Additional Protocol I.<sup>68</sup> These situations, including crimes and terrorism, are impacted by scientific technology and societal structures. In general, military conflict may result in the emergence of man-made ecological catastrophes that inflict damage on the environment and jeopardise human existence and welfare.

g) Air Pollution

The combustion of fossil fuels, the catastrophic collapse of buildings, and the leakage of hazardous chemicals can lead to air pollution. Hazardous pollutants may be released into the environment caused by using explosives and weapons.<sup>69</sup> Approximately 700 Kuwaiti oil wells along with other oil-spill pools remained ablaze following the Gulf War in 1991, which was started by Iraqi troops<sup>70</sup>. These fires produced enormous plumes of towering smoke, which soared high into the sky. A vast expanse of noxious fumes, characterised by its oily composition, extended across a distance exceeding 30 miles in the region of the Persian Gulf.<sup>71</sup> The German Chancellor at the time, Helmut Kohl, deemed this to be an environmental offence. Shortly after, the Council of Europe's Parliamentary Assembly demanded that a war

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<sup>66</sup> *ibid.*

<sup>67</sup> *ibid.*

<sup>68</sup> Muhammad Ryan Dwi Saputra, 'The Use of Methods or Means of Warfare Which Caused Damage to the Natural Environment Based on the International Humanitarian Law' (2019) 4 *Padjadjaran Journal of International Law* 207

<[https://scholar.google.com/scholar?hl=en&as\\_sdt=0%2C5&q=The+use+of+methods+or+means+of+warfare+whic+h+caused+damage+to+the+natural+environment+based+on+the+international+humanitarian+law&btnG=>](https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=The+use+of+methods+or+means+of+warfare+whic+h+caused+damage+to+the+natural+environment+based+on+the+international+humanitarian+law&btnG=>)>  
accessed 29 November 2023.

<sup>69</sup> McManus (n 56).

<sup>70</sup> Freeland (n 13).

<sup>71</sup> 'The Untold Story of the World's Fiercest Tank Battle' (*History*, 24 February 2021) <<https://www.nationalgeographic.com/history/article/untold-story-worlds-fiercest-tank-battle-gulf-war>> accessed 15 November 2023.

crimes tribunal be established to bring charges against the people behind this environmental massacre<sup>72</sup>.

#### h) Land Mines

According to the ICRC Landmines Report, there are an estimated eighty-four million undiscovered land mines in 64 different nations worldwide, underscoring the difficulty of demining areas.<sup>73</sup> It is a concern that anti-personnel mines are being used, and international agreements have been drawn up made to address this issue.<sup>74</sup>

#### i) Usage of Chemicals:

The chemicals employed in warfare or specifically developed for use during times of war include Lewisite, Sulfur Mustard, and Nitrogen Mustard.<sup>75</sup> Lewisite is highly poisonous and contains arsenic. Liquid substances have the potential to pollute water and food, as well as agricultural products if they are disseminated as a spray. Sulfur Mustard is a chemical compound containing the smell of mustard.<sup>76</sup> It is a very corrosive substance that inflicts severe burns on the eyes, the skin, including the respiratory tract of those exposed to it. Similar to Lewisite, it can contaminate food, water, and agricultural products when applied as a liquid spray.<sup>77</sup> Nitrogen Mustard, is a potent vesicant similar to Lewisite, it can pollute food supplies, water, including agricultural products. Hydrogen cyanide has a sluggish evaporation rate, which means it can remain dangerous for a long time after an area has been initially contaminated.<sup>78</sup> Tabun, Sarin, Soman, VX, etc. are examples of highly toxic chemical substances that are used in warfare to pollute the air and water, and have detrimental effects on biodiversity and the environment.<sup>79</sup>

#### j) Bombing

The United States, in 1945, used atomic bombs as their war weapon in the Japanese cities of Hiroshima and Nagasaki, causing massive environmental destruction, affecting the Northern Hemisphere's ozone layer, igniting massive fires, and contaminating the land, water, and air

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<sup>72</sup> Freeland (n 13).

<sup>73</sup> *ibid.*

<sup>74</sup> *ibid.*

<sup>75</sup> Brendan Doran, 'The Human and Environmental Effects of CBRN Weapons' [2015] Fordham University Libraries <[https://research.library.fordham.edu/enviro\\_2015/10](https://research.library.fordham.edu/enviro_2015/10)> accessed 30 November 2023.

<sup>76</sup> *ibid.*

<sup>77</sup> *ibid.*

<sup>78</sup> *ibid.*

<sup>79</sup> *ibid.*

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for generations.<sup>80</sup> However, significant modifications to IHL were brought about by US usage of herbicides, Rome plows, heavy bombardment, and documented weather modification in Vietnam.<sup>81</sup>

k) Aerial Attacks

Military operations frequently employ both rotary and fixed-wing aircraft, which are capable of generating sudden and intense noise, such as jet afterburners, sonic booms, and rotary pulses.<sup>82</sup> Many animals have a more sensitive hearing system than humans<sup>83</sup>. As a result, activities in the air contribute significantly to noise pollution, which is a global concern<sup>84</sup> for the welfare of wildlife<sup>85</sup>. Military aircraft noise has several consequences on wildlife, including primary, secondary, and tertiary impacts<sup>86</sup>. These effects might occur either in the short term or long term, and can range from non-fatal to fatal consequences that can result in permanent damage.<sup>87</sup> The primary consequences may involve the rupture of the eardrum, alterations in auditory capabilities and potential auditory signal masking, such as the inability to discern sounds from prey, predators, or mates. Secondary effects are associated with physiological consequences<sup>88</sup>, which might result in obstacles to reproduction, foraging behavior, and natural habitat utilisation of wildlife living in locations with high levels of aircraft noise<sup>89</sup>. Tertiary impacts encompass the amalgamation of primary and secondary consequences, which may result in reductions in population, extinction of species, and deterioration of habitats<sup>90</sup>. Ecological structure has been impacted by factors other than noise pollution caused by military aircraft. An instance of this can be seen in the context of World War II, where aircraft landing

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<sup>80</sup> Wirthová (n 55).

<sup>81</sup> *ibid.*

<sup>82</sup> Karen M Mancini, *Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis* (US Fish and Wildlife Service, National Ecology Research Center 1988).

<sup>83</sup> *ibid.*

<sup>84</sup> 'Effects of Aircraft Noise and Sonic Booms on Fish and Wildlife: Results of a Survey of U.S. Fish and Wildlife Service Endangered Species and Ecological Services Field Offices, Refuges, Hatcheries, and Research Centers' <<https://apps.dtic.mil/sti/citations/ADA201965>> accessed 10 May 2024.

<sup>85</sup> GM Dunnet, 'Observations on the Effects of Low-Flying Aircraft at Seabird Colonies on the Coast of Aberdeenshire, Scotland' (1977) 12 *Biological Conservation* 55 <<https://www.sciencedirect.com/science/article/pii/00063207790057X>> accessed 10 May 2024.

<sup>86</sup> Mancini (n 82).

<sup>87</sup> Lawrence and others (n 23).

<sup>88</sup> Mancini (n 82).

<sup>89</sup> Robert A Francis, 'The Impacts of Modern Warfare on Freshwater Ecosystems' (2011) 48 *Environmental Management* 985 <<https://doi.org/10.1007/s00267-011-9746-9>> accessed 10 May 2024.

<sup>90</sup> Mancini (n 82).

strips utilised for refueling and staging terminals throughout missions in the Pacific theatre helped transport exotic species, including cultivated species and weeds, to oceanic island ecosystems<sup>91</sup>. Before the war, these remote islands had some vulnerable and native species which had naturally migrated to their present locations, meanwhile, following aerial warfare episodes, a significant influx of alien species occurred on these small islands.<sup>92</sup> This led to changes in the evolutionary trajectories of local species, resulting in competitive exclusion, predation, and the eventual extinction of native species<sup>93</sup>. Aerial warfare has significantly impacted population dynamics directly. Air-to-ground attacks have been observed to result in increased wildlife morbidity<sup>94</sup> and the destruction of natural habitat, both of which can lead to a reduction in the local population. Several species, such as snow leopards and Asian elephants, have been subjected to these effects.<sup>95</sup>

#### **4. Future Possible Methods**

##### **a) Usage of High Technology-insulated Drones**

The utilisation of man-controlled drones in military operations has experienced a substantial surge, establishing them as a crucial component in contemporary combat, including the ongoing conflict in Ukraine.<sup>96</sup> Ground targets are being precisely attacked using drones that are outfitted with loitering weapons.<sup>97</sup> Nevertheless, the utilisation of drones in warfare gives rise to apprehensions about the devastation of the environment. The environmental consequences of drone attacks, specifically the damage caused by hovering explosives, are a

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<sup>91</sup> DR Stoddart, 'Catastrophic Human Interference with Coral Atoll Ecosystems' (1968) 53 *Geography* 25 <<https://www.jstor.org/stable/40566472>> accessed 10 May 2024.

<sup>92</sup> Lawrence and others (n 23).

<sup>93</sup> HA Mooney and EE Cleland, 'The Evolutionary Impact of Invasive Species' (2001) 98 *Proceedings of the National Academy of Sciences* 5446 <<https://www.pnas.org/doi/full/10.1073/pnas.091093398>> accessed 10 May 2024.

<sup>94</sup> Lawrence and others (n 23).

<sup>95</sup> *ibid.*

<sup>96</sup> Nils MELZER (Geneva Centre for Security Policy- Gcsp and Geneva Academy-ADH) Swiss Chair of International Humanitarian Law, 'Human Rights Implications of the Usage of Drones and Unmanned Robots in Warfare' <<https://policycommons.net/artifacts/1333082/human-rights-implications-of-the-usage-of-drones-and-unmanned-robots-in-warfare/1937328/>> accessed 29 November 2023.

<sup>97</sup> Aron Douglas Massey, 'The Role of Drones in Anti-Mountaintop Removal Activism: Environment & Agriculture Journal Article | IGI Global' (2021) 1 *International Journal of Applied Geospatial Research (IJAGR)* 15 <<https://www.igi-global.com/article/the-role-of-drones-in-anti-mountaintop-removal-activism/266456>> accessed 29 November 2023.



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subject of great concern. The environmental impact of drones poses a substantial ethical dilemma that requires attention.

b) Usage of Advanced Chemical Weapons

The utilisation of advanced chemical weaponry in forthcoming conflicts is a highly probable occurrence as a result of progress in delivery systems, emerging urban battlefields, and the expansion of population.<sup>98</sup> Multiple nations have reserves of chemical-based munitions, and an increasing number of nations are actively pursuing the ability to create and use these weapons.<sup>99</sup> Chemical weapons harmed military operations from their initial deployment in World War I. Presently, U.S. Army Brigades lack adequate training to effectively function in a battlefield contaminated with chemical agents.<sup>100</sup> The 1992 Chemical Weapons Convention, which has been authorised by the United Nations, seeks to tackle these concerns by setting a legally binding worldwide benchmark for countries to refrain from using chemical weapons and to eliminate their stocks.<sup>101</sup>

c) Technical innovations to infertile agricultural lands

Due to decreased agriculture, the degradation of land and infrastructure, agricultural regions may become permanently barren during times of war.<sup>102</sup> However, the contending state may intentionally cause all of these factors to harm the other side and hinder economic-social progress. Abandoned croplands are a direct result of the devastating effects that military wars like the one between Russia and Ukraine along with the Chechen War have had on agricultural development and administration.<sup>103</sup> Research has shown that the vicinity of wars and the

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<sup>98</sup> Colton M Moran, 'The Future of Chemical Warfare: How Urbanization and Proliferation of Delivery Mechanisms Create the Need for In-Situ Defense' in Margaret E Kosal (ed), *Proliferation of Weapons- and Dual-Use Technologies: Diplomatic, Information, Military, and Economic Approaches* (Springer International Publishing 2021) <[https://doi.org/10.1007/978-3-030-73655-2\\_7](https://doi.org/10.1007/978-3-030-73655-2_7)> accessed 29 November 2023.

<sup>99</sup> *ibid.*

<sup>100</sup> David L Wilcox, 'Chemical Corps: Break Glass in Case of War.' <<https://apps.dtic.mil/sti/citations/ADA340037>> accessed 29 November 2023.

<sup>101</sup> Ramesh Thakur And Ere Haru, *The Chemical Weapons Convention: Implementation , Challenges , Opportunities* (Pearson Education India 2007).

<sup>102</sup> Yue Ma and others, 'Spatiotemporal Analysis and War Impact Assessment of Agricultural Land in Ukraine Using RS and GIS Technology' (2022) 11 Land 1810 <<https://www.mdpi.com/2073-445X/11/10/1810>> accessed 29 November 2023.

<sup>103</sup> He Yin and others, 'Agricultural Abandonment and Re-Cultivation during and after the Chechen Wars in the Northern Caucasus' (2019) 55 Global Environmental Change 149 <<https://www.sciencedirect.com/science/article/pii/S0959378018305697>> accessed 29 November 2023.

severity of the conflicts impact the probability of agricultural land being left unused and not being cultivated again.<sup>104</sup>

#### ***4. Current Conflict-induced Environmental Damage and Its Long-term Effects***

Russia initiated an invasion of Ukraine on February 24, 2022, which resulted in the commencement of the greatest warfare in Europe since World War II.<sup>105</sup> Less than a month after Russia began their invasion, on March 19, 2022, the concentration of fine particulate matter in Kyiv reached 27.8 times higher than the WHO's recommended level due to bombing and building fires.<sup>106</sup> Demolition of gasoline storage facilities: In the initial 13 months of the war, a total of 36 fuel storage sites, consisting of 17 oil depots, were demolished.<sup>107</sup> This resulted in the release of pollutants due to the combustion of 108,000 tons of oil and petrol<sup>108</sup>. The conflict has made Ukraine more susceptible to climate change and has made efforts to cut greenhouse gas emissions more difficult<sup>109</sup>. Approximately 21.9 million tons of carbon dioxide were emitted during the initial 12 months of the war due to war-related activities. Additionally, an extra 17.7 million carbon dioxide were released via war-related arson<sup>110</sup>. Across Ukraine, the total capacity of installed renewable energy sources was approximately 10 giga-watts, accounting for more than 13% of the country's total installed energy capacity<sup>111</sup>. Russia's utilisation of energy resources as weapons, devastation of Ukraine's power generating and heating infrastructure, extensive deforestation, and harm to Ukraine's renewable energy systems have seriously hampered the attainment of the objective to reach up to 66%.<sup>112</sup> Before the conflict, Ukraine possessed a well-established water industry that has subsequently been

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<sup>104</sup> Lina Eklund and others, 'How Conflict Affects Land Use: Agricultural Activity in Areas Seized by the Islamic State' (2017) 12 *Environmental Research Letters* 054004 <<https://dx.doi.org/10.1088/1748-9326/aa673a>> accessed 29 November 2023.

<sup>105</sup> Daniel Hryhorczuk and others, 'The Environmental Health Impacts of Russia's War on Ukraine' (2024) 19 *Journal of Occupational Medicine and Toxicology* 1 <<https://doi.org/10.1186/s12995-023-00398-y>> accessed 13 May 2024.

<sup>106</sup> Olena I Turos and others, 'ASSESSMENT OF AMBIENT AIR POLLUTION BY PARTICULATE MATTER (PM<sub>10</sub>, PM<sub>2.5</sub>) AND RISK FOR HUMAN HEALTH CAUSED BY WAR ACTIONS' (2023) 76 *Wiadomosci Lekarskie* (Warsaw, Poland: 1960) 738.

<sup>107</sup> *ibid.*

<sup>108</sup> *ibid.*

<sup>109</sup> Oli Brown and others, 'An Independent Experts' Analysis for the OSCE, Coordinated by Chatham House'.

<sup>110</sup> Turos and others (n 106).

<sup>111</sup> 'Що Залишилося Від "Зеленої" Енергетики в Україні' (*Економічна правда*) <<https://www.epravda.com.ua/publications/2023/05/24/700431/>> accessed 13 May 2024.

<sup>112</sup> Turos and others (n 106).

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severely damaged as a result of Russia's incursion. In July 2023, Ukraine's Ministry of Environmental Protection and Natural Resources recorded the demolition of 724 hydraulic infrastructures, 71 water pumping locations, 64 sewage pumping points, and 23 water treatment facilities<sup>113</sup>. Due to the battle, a total of 20.7 billion cubic meters of effluent have been released into surface waters.<sup>114</sup> By April 2022, around 6 million individuals in Ukraine, accounting for roughly 15% of the population, faced restricted or nonexistent availability of potable water<sup>115</sup>. Following the demolition of the Nova Kakhovka Dam in June 2023, almost 1.25 million individuals, including over 300,000 children, residing in the Dnipro, Zaporizhzhia, Mykolaiv, and Kherson oblasts, were left without access to reliable and uncontaminated drinking water<sup>116</sup>. In 2019, about 760 million cubic meters of contaminated water from flooded mines in eastern Ukraine resulted in the deposition of nearly 2.5 million tons of salts and other pollutants in the Severniy Donets River and the Sea of Azov<sup>117</sup>. In Ukraine, unexploded ordnance, comprising rockets, missiles, grenades, mortar shells, artillery shells, and improvised explosive devices, contaminates nearly one-third of the country's terrain.<sup>118</sup> As of July 2023, more than 49 mines were inundated in eastern Ukraine under Russian occupation.<sup>119</sup> The failure rates of certain types of explosives can be exceedingly high, and those bombs that do not explode initially may detonate unexpectedly at any moment.<sup>120</sup> Once the battle ends, it will potentially require a span of 50 years to completely remove all the landmines and explosive munitions.<sup>121</sup>

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<sup>113</sup> 'Updated Ukraine Recovery and Reconstruction Needs Assessment Released' (*World Bank*) <<https://www.worldbank.org/en/news/press-release/2024/02/15/updated-ukraine-recovery-and-reconstruction-needs-assessment-released>> accessed 13 May 2024.

<sup>114</sup> Turos and others (n 106).

<sup>115</sup> Oleksandra Shumilova and others, 'Impact of the Russia-Ukraine Armed Conflict on Water Resources and Water Infrastructure' (2023) 6 *Nature Sustainability* 578 <<https://www.nature.com/articles/s41893-023-01068-x>> accessed 13 May 2024.

<sup>116</sup> 'Ukraine: Thousands of Children Lack Safe Drinking Water as Kakhovka Dam Crisis Unravels - Ukraine | ReliefWeb' (25 July 2023) <<https://reliefweb.int/report/ukraine/ukraine-thousands-children-lack-safe-drinking-water-kakhovka-dam-crisis-unravels>> accessed 13 May 2024.

<sup>117</sup> 'Coal Mines, Land Mines and Nuclear Bombs: The Environmental Cost of the War in Eastern Ukraine - Foreign Policy Research Institute' <<https://www.fpri.org/article/2019/09/coal-mines-land-mines-and-nuclear-bombs-the-environmental-cost-of-the-war-in-eastern-ukraine/>> accessed 13 May 2024.

<sup>118</sup> Turos and others (n 106).

<sup>119</sup> 'The Toxic Legacy of the Ukraine War' <<https://www.bbc.com/future/article/20230221-the-toxic-legacy-of-the-ukraine-war>> accessed 13 May 2024.

<sup>120</sup> Hryhorczuk and others (n 105).

<sup>121</sup> 'Landmines and Explosive Remnants of War in Ukraine Will Take Decades to Clear' <<https://www.kyivpost.com/post/14439>> accessed 13 May 2024.

Another scenario can be reflected in this context which is the present conflict between Israel and Palestine. The coastal area of which was once the glory of Gaza, is now a barren panorama of military facilities, craters, and ruins in place of orchards, beautiful beaches, and strawberry fields.<sup>122</sup> A buffer zone extending over 300 meters along the northern frontier between Israel and the Gaza Strip has been cleared by Israeli bulldozers through the destruction of fields and orchards.<sup>123</sup> A total of 40% of Gaza's 170 km<sup>2</sup> of agricultural land, which made up half of the region before the war, has been ravaged. In Gaza, 2000 agricultural structures have also been destroyed, including 90% of the greenhouses in the northern areas. According to a British-American analysis, the greenhouse gas emissions produced during the first two months of the Gaza conflict exceeded the yearly emissions of nearly 20 of the world's most climate-vulnerable countries.<sup>124</sup> It's estimated that 70,000 tons of solid trash have piled up in the improvised landfills that have appeared throughout the Gaza Strip, poisoning the area's rivers and soil. The UN says that the daily dumping of over 130,000 cubic meters of water into the Mediterranean Sea seriously harms the underwater flora and animals.<sup>125</sup> The UN has launched an investigation into environmental degradation, indicating the gravity of the situation.<sup>126</sup> However, any judgment will have to wait till the battle is over before these actions may be taken and therefore, it is of no use to stop the current destruction that has been ongoing in the conflict areas. Additionally, the Israeli Meteorological Service expressed concern regarding the climate vulnerabilities of the region.<sup>127</sup> In contrast to the 1.1°C increase in global temperatures since pre-industrial times, Israel and Palestine have experienced a 1.5°C (2.7°F) temperature rise and an increase of 4°C (7.2°F) in temperature is anticipated by the end of the

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<sup>122</sup> The New Arab Staff & Agencies, “‘Unlike Anything We Have Studied’: Gaza’s Destruction in Numbers” (<https://www.newarab.com/>, 7 May 2024) <<https://www.newarab.com/news/unlike-anything-we-have-studied-gazas-destruction-numbers>> accessed 13 May 2024.

<sup>123</sup> The New Arab Staff, ‘Israel Destroyed Almost All Buildings in Gaza “Buffer Zone”’ (<https://www.newarab.com/>, 16 April 2024) <<https://www.newarab.com/news/israel-destroyed-almost-all-buildings-gaza-buffer-zone>> accessed 13 May 2024.

<sup>124</sup> Reporterre, ‘Guerre à Gaza : 300 000 Tonnes de CO<sub>2</sub> Relâchées Dans l’atmosphère’ (*Reporterre, le média de l’écologie - Indépendant et en accès libre*) <<https://reporterre.net/Guerre-a-Gaza-300-000-tonnes-de-CO2-relachees-dans-l-atmosphere>> accessed 13 May 2024.

<sup>125</sup> ‘Palestine: Not Enough Water to Survive | NRC’ <<https://www.nrc.no/news/2023/november/not-enough-water-to-survive/>> accessed 13 May 2024.

<sup>126</sup> ‘Turning the Corner on Environmental Crises in 2024’ <<https://www.unep.org/news-and-stories/speech/turning-corner-environmental-crises-2024>> accessed 13 May 2024.

<sup>127</sup> ‘The Not-So-Hidden Climate Risks for Gaza’s Displaced’ (*Climate Refugees*, 11 January 2024) <<https://www.climate-refugees.org/spotlight/2023/1/11/gaza>> accessed 13 May 2024.

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century.<sup>128</sup> Gaza is expected to experience 20 percent less rainfall by 2050, according to the ICRC.<sup>129</sup> Concurrently, temperature is projected to continue to rise, reaching 2.5 degrees by 2055, and dry spells, heat-waves, and droughts are anticipated to intensify.<sup>130</sup>

Soils in the Flanders region of Belgium still have high levels of copper as a result of the heavy artillery bombardment during World War I, which occurred more than a century ago.<sup>131</sup> In France, there is a region called ‘Zone Rouge’ that is still unsuitable for farming due to the presence of war debris, unexploded shells, and explosives left over from past battles<sup>132</sup>. War also has detrimental impacts on adjacent countries’ ecology. Armed conflicts and the subsequent displacement of people have resulted in extensive deforestation in Afghanistan, Nepal, the Thailand/Myanmar border, and Pakistan in Asia.<sup>133</sup> Similarly, in Africa, war and refugee movements have caused significant deforestation in Somalia, Uganda, Sudan, Angola, Congo, Ethiopia, Kenya, Malawi, and Sierra Leone. As a recent evidentiary issue, the internal conflicts in Myanmar can be highlighted which have resulted in a significant influx of Rohingya refugees into Bangladesh, recognised as one of the most ecologically vulnerable nations.<sup>134</sup> Till December 2023, UNHCR documented around 971,904 Rohingya refugees residing in Bangladesh.<sup>135</sup> The empirical study of Ahmed and Sabastini (2023) employed the sustainable livelihoods framework to demonstrate how the deforestation caused by the refugee influx in Teknaf can have a disproportionate impact on members of the host community who are economically and ethnically marginalised and who depend on forest resources for income-generating activities as the energy demands of refugee groups frequently result in deforestation, causing significant environmental consequences.<sup>136</sup> The study enumerates that the landscape of Teknaf originally consisted of forest areas, which accounted

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<sup>128</sup> *ibid.*

<sup>129</sup> ‘Weathering the Storm: Reducing the Impact of Climate Risks and Environmental Degradation on People Enduring Armed Conflicts | International Committee of the Red Cross’ <<https://www.icrc.org/en/publication/4742-weathering-storm-reducing-impact-climate-risks-and-environmental-degradation-people>> accessed 13 May 2024.

<sup>130</sup> *ibid.*

<sup>131</sup> ‘The Toxic Legacy of the Ukraine War’ (n 119).

<sup>132</sup> *ibid.*

<sup>133</sup> Tasfia Ahmed and Priyong Sabastini, *Deforestation as a Site of Conflict and Differentiation: The Case of the Rohingya Refugee Influx in Teknaf* (2023).

<sup>134</sup> *ibid.*

<sup>135</sup> ‘Bangladesh’ (*Global Focus*) <<https://reporting.unhcr.org/operational/operations/bangladesh>> accessed 19 May 2024.

<sup>136</sup> Ahmed and Sabastini (n 133).

for approximately 41% of its land cover with 11,610 ha of the area being declared as the Teknaf Wildlife Sanctuary in 2009.<sup>137</sup> To make room for the refugee camps, about 2,283 acres of forest land were originally removed.<sup>138</sup> Due to the construction of camps and the unlawful chopping of trees by the refugees, more than 3000 hectares of forest had been lost within the first two years of the influx.<sup>139</sup>

#### **D. PROTECTIONS PROVIDED UNDER HUMANITARIAN LAW: ADDRESSING EFFICIENCY AND DEFICIENCY**

A multitude of legislation exists to safeguard the environment, but the existence of various methods to use the environment as a war strategy, as discussed above, has taken a toll on ecology. The issue of using the environment as a military tool persists despite the existence of laws, raising the question of whether the current legal system is entirely correct or if it has any real value.

##### ***1. General Principles of IHL Applicable to Environment Preservation***

One of the significant IHL principles is the Martens Clause. It mandates that States abide by a baseline set by the standards of ‘humanity’ and ‘public conscience’ in cases where deficiencies are present in the global system -regulating specific circumstances. If laws do not contain further protections safeguarding the environment, the Martens Clause has been regarded as fundamental.<sup>140</sup> The Principle of Distinction forbids direct strikes against indiscriminate attacks. The term "military objectives" is defined in API<sup>141</sup> as objectives that, due to their inherent characteristics, position, intention, or function, significantly contribute to a military operation and whose complete or partial loss, may provide a distinct military benefit.<sup>142</sup> Targeting such locations would be against the principle of distinction and, consequently, Article 52(2), given that most environmentally and ecologically important places and protected areas are non-military. The Principle of Military Necessity mandates that

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<sup>137</sup> *ibid.*

<sup>138</sup> *ibid.*

<sup>139</sup> *ibid.*

<sup>140</sup> ‘The Environment and International Humanitarian Law | How Does Law Protect in War? - Online Casebook’ (n 62).

<sup>141</sup> Article: 52(2).

<sup>142</sup> ‘The Environment and International Humanitarian Law | How Does Law Protect in War? - Online Casebook’ (n 62).

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using force is only acceptable when it is required to accomplish a specific military goal.<sup>143</sup> Article 23(g) of the Hague Convention IV, reflects the idea of military necessity. It states that property belonging to the enemy may not be destroyed or seized unless it is necessary to carry out the requisites of war. Enemy property may include high-value natural resources, environmental commodities, and protected places, all of which may receive indirect protection; this clause is extremely relevant to the environment.<sup>144</sup> And as per the principle of proportionality, a disproportionate attack is one in which the ‘collateral damage’ would be viewed as excessive in comparison to the expected direct military advantage achieved, according to the criterion outlined in Article 57 of AP I of the Geneva Convention. Particular environmental harms are unlawful because they are a “disproportionate” response to a perceived threat, such as the extensive pollution resulting from the combustion of oil fields and the gallons of oil poured into the Gulf Sea during the Gulf War.<sup>145</sup> Moreover, the principle of humanity is against the humane ethic to cause needless pain, harm, or destruction. This theory suggests that ‘inhumane’ forms of warfare could include poisoning water wells and destroying resources like agriculture and forestry that support the populace, as is the case with the current violence in Darfur.<sup>146</sup>

## ***2. International Humanitarian Law Directly Addressing Environmental Concerns***

### **a) UN Convention on the Prohibition of Military or Any Other Use of Environmental Modification Technique 1976**

The primary objective behind the 1976 implementation of ENMOD was to prohibit the utilization of environmental manipulation methods with military intentions.<sup>147</sup> The military techniques employed by the United States during the Vietnam War led to the emergence of the ENMOD Convention. Plans for extensive disruption of the environment techniques that may be used to trigger natural disasters like tsunamis and earthquakes or fluctuations in weather patterns were among them; these techniques have been referred to as ‘geophysical warfare’ by some critics.<sup>148</sup> The extensive use of chemicals referred to as Agents Orange, White, and

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<sup>143</sup> *ibid.*

<sup>144</sup> *ibid.*

<sup>145</sup> *ibid.*

<sup>146</sup> *ibid.*

<sup>147</sup> *ibid.*

<sup>148</sup> *ibid.*

Blue that caused long-term environmental contamination also prompted the Convention.<sup>149</sup> According to Article 1 of the Convention, every State Party is required to refrain from using military force or any other means of altering the environment that have significant, long-lasting, or widespread consequences, with the target of inflicting harm to any other State Party.<sup>150</sup>

b) Additional Protocol I to the Geneva Convention (1977)

According to Article 35 of the AP I of the Geneva Convention, the employment of combat tactics or weapons that have the potential to cause significant and lasting damage to the environment is strictly prohibited.<sup>151</sup> Additionally, Article 55 lists the following, when attacking; care must be taken to prevent extensive harm to nature. A part of this protection involves forbidding the employment of military tactics or weapons that are likely or planned to harm the environment, endangering public health and survival.<sup>152</sup> This safeguard encompasses a restriction on employing tactics or tools of warfare that are designed or likely to harm the natural environment, hence jeopardising the well-being or existence of the population.<sup>153</sup>

c) Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects 1980 and Its Protocols:

The Convention emphasised that it is forbidden to use military tactics or weapons that are likely to seriously harm the environment in a large-scale, long-term manner.<sup>154</sup> The Convention and Protocols restrict the use of weapons that cause extreme agony or cruelty. Article 1 includes defines and Article 2 specifically declares, that forests and other vegetation cannot be targeted employing incendiary weapons unless they are being utilised to disguise or defend

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<sup>149</sup> *ibid.*

<sup>150</sup> *ibid.*

<sup>151</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.' <<https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/article-35>> accessed 24 November 2023.

<sup>152</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.' <<https://ihl-databases.icrc.org/en/ihl-treaties/api-1977/article-55>> accessed 24 November 2023.

<sup>153</sup> Eric T Jensen, 'The International Law of Environmental Warfare: Active and Passive Damage During Armed Conflict' (2005) 38 145 <<https://scholarship.law.vanderbilt.edu/vjtl/vol38/iss1/4>> accessed 27 November 2023.

<sup>154</sup> Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects. Geneva, 10 October 1980.



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soldiers or military targets. Despite cover restrictions, this rule is notable for its wide selection of weapons. Protocol III shows that the world community recognized ENMOD and Protocol I were insufficient to protect the environment.<sup>155</sup>

### ***3. International Humanitarian Law Indirectly Addressing Environment Protection***

#### **a) The Hague Convention IV (1907)**

Article 22 of this Convention asserts that the ability of parties involved in a dispute to employ methods of attacking the opposing party is not without restrictions. Article 23, namely the provisions outlined in subsections (e) and (g), impose limitations on environmental harm during times of conflict, without explicitly mentioning it. Article 23(e) prohibits the employment of weapons that would inflict unnecessary sufferings while Article 23(g) declares it illegal to damage or confiscate the opposite parties' possessions unless it is required due to the demands of war.<sup>156</sup> Article 55 of Section III, establishes a direct connection to the environment. It states that the occupying State is considered solely as an administrator and beneficiary of forests and agricultural land that belong to the adversarial state and are located in the occupied country.<sup>157</sup> All things considered, the 1907 Convention represents a major advancement in establishing legislative restrictions that will protect the environment from damages caused by conflicts.<sup>158</sup>

#### **b) The Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare (1925)**

Civilised nations have rightfully denounced the Geneva Protocol paragraph that implicitly protects the environment, states, and the use of asphyxiating, toxic, or similar gases, liquids, or devices in battle. The UN General Assembly has passed multiple resolutions to make this prohibition part of international law and bind nations' moral and practical conduct.<sup>159</sup> These resolutions urge all governments to rigorously abide by the principles and goals set forth in the Geneva Protocol of 1925, denounce any actions that contravene these goals, and promote the

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<sup>155</sup> Jensen (n 153).

<sup>156</sup> *ibid.*

<sup>157</sup> *ibid.*

<sup>158</sup> *ibid.*

<sup>159</sup> 'Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare. Geneva, 17 June 1925' <<https://ihl-databases.icrc.org/en/ihl-treaties/geneva-gas-prot-1925/protocol>> accessed 1 December 2023.

participation of all states in the Protocol. Resolution 2603 A (XXIV) of December 16, 1969 provides an interpretation of the Geneva Protocol of 1925.<sup>160</sup>

c) The Geneva Convention IV, 1949

The fourth Geneva Convention largely focused on safeguarding civilians. According to Article 53, an occupying force is not allowed to destroy private property unless it is absolutely necessary due to military operations.<sup>161</sup> Although this provided minimal tangible safeguard, it demonstrated post-war society's belief that environmental consequences should be considered during battle and that permissible harm inflicted upon the environment are limited, even in times of war.<sup>162</sup>

d) The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons and on their Destruction 1972

Article I of the treaty requires that signatory states must avoid activities associated with the creation, production, stockpiling, or acquisition of chemicals, substances, or their delivery systems, which could serve as weapons for hostile purposes or in conflicts.<sup>163</sup> Article II of the treaty compels participating nations to eliminate chemical agents, weapons, equipment, and delivery of such objects that are forbidden under Article I.<sup>164</sup> Article III includes a commitment of abstinence from transferring, either directly or indirectly, providing any assistance, encouragement, or inducement to any State, group of States, or international entity to produce or obtain any of the aforementioned objects.<sup>165</sup> While environmental conservation is not a stated purpose of the instrument, it inadvertently safeguards ecosystems and biodiversity during armed conflicts by removing the potential of biological agent exposure.

e) Additional Protocol I to the 1949 Geneva Conventions (1977)

Article 54 of the legislation protects objects that are vital for the civilian population, including the agricultural sector.<sup>166</sup> On the other hand, Article 56 ensures the safety of facilities and

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<sup>160</sup> *ibid.*

<sup>161</sup> Jensen (n 153).

<sup>162</sup> *ibid.*

<sup>163</sup> Bakhtiyar Tuzmukhamedov, 'CONVENTION ON THE PROHIBITION OF THE DEVELOPMENT, PRODUCTION AND STOCKPILING OF BACTERIOLOGICAL (BIOLOGICAL) AND TOXIN WEAPONS AND ON THEIR DESTRUCTION' [2021] United Nations Audiovisual Library of International Law <[https://legal.un.org/avl/pdf/ha/cpdpsbttwd/cpdpsbttwd\\_e.pdf](https://legal.un.org/avl/pdf/ha/cpdpsbttwd/cpdpsbttwd_e.pdf)> accessed 1 December 2023.

<sup>164</sup> *ibid.*

<sup>165</sup> *ibid.*

<sup>166</sup> Jensen (n 153).

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structures that possess potentially hazardous powers, such as nuclear power plants.<sup>167</sup> Article 52 safeguards non-military structures, while Article 53 ensures the preservation of cultural assets and religious sites.<sup>168</sup> The rules outlined in Protocol I serve as the most explicit declaration under conventional law that passive environmental warfare, with effects reaching a specified level of intensity, is strictly prohibited.<sup>169</sup>

f) Chemical Weapons Convention (1993) and Its Protocol II

The Convention's main goal is to ban the creation, manufacturing, accumulation, and use of chemical weapons and guarantee their elimination, which safeguards the environment.<sup>170</sup> Article IV requires States Parties to allow on-site verification and inspection of their chemical weapons and destruction facilities. Chemical weapons disposal must begin within two years of the Convention taking effect for the State Party and finish within ten years.<sup>171</sup> Furthermore, Article XXII stipulates that the provisions of this Convention cannot be subjected to any reservations. Reservations that go against the purpose and goals of this Convention cannot be applied to its Annexes.<sup>172</sup> The provision establishes a robust framework for implementing the instrument.

g) The Ottawa Convention 1997:

The convention recognises the scope of the landmine issue and, taking into account the social, financial, and environmental consequences, permits a maximum of ten years to completely eliminate all stockpiles.<sup>173</sup> The instrument has secondary ramifications for the conservation of the environment because anti-personnel mines frequently continue to function long after hostilities have ended, endangering both people and ecosystems, they can have adverse impacts on the ecosystem.<sup>174</sup> It addresses the issues of mine clearance, including proper elimination and destruction of mines, as well as the environmental considerations involved in mine clearance. It also emphasizes the importance of assisting countries affected.

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<sup>167</sup> *ibid.*

<sup>168</sup> *ibid.*

<sup>169</sup> *ibid.*

<sup>170</sup> 'Chemical Weapons Convention' (OPCW) <<https://www.opcw.org/chemical-weapons-convention>> accessed 1 December 2023.

<sup>171</sup> 'Chemical Weapons Convention' (OPCW) <<https://www.opcw.org/chemical-weapons-convention>> accessed 1 December 2023.

<sup>172</sup> *ibid.*

<sup>173</sup> Freeland (n 13).

<sup>174</sup> *ibid.*

#### h) Protocol on Explosive Remnants of War, 2003

The Protocol is an amendment to the Convention on Certain Conventional Weapons. The objective of the Protocol is to remove explosive remnants of war in the aftermath of armed warfare while secondarily focusing on the preservation of the environment from the harmful impacts of such weaponry.<sup>175</sup>

#### i) Convention on Cluster Munitions 2008

The convention's main goals are to safeguard civilians and reduce the harm that cluster munitions might wreak while tangentially supporting environmental preservation. Article 1 of the Convention delineates the overall responsibilities and extent of the convention's applicability. The convention's objective is to prohibit the utilisation, accumulation, creation, and transmission of cluster bombs.<sup>176</sup> Article 4 underscores the significance of decontaminating regions affected by cluster munitions and guarantees the secure elimination and eradication of these remnants.<sup>177</sup>

### **4. Other Instruments**

#### a) UNGA Resolution 47/37, 1993

The UNGA convened a significant discussion on environmental preservation during the armed conflict in 1992.<sup>178</sup> The ensuing resolution (RES 47/37) sought Member States to take all necessary steps towards guaranteeing adherence to current international agreements on the preservation of the environment amid armed conflict, even though it did not call for the creation of a new convention. Additionally, it advised States to take action to ensure that pertinent elements of international law are adequately distributed and included in their military manuals.<sup>179</sup>

#### b) The ICRC Guidelines, 2020

The ICRC was assigned to draft guidelines by the United Nations General Assembly to address environmental concerns and provide a proper guideline. These were eventually codified in

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<sup>175</sup> 'CCW Protocol V on Explosive Remnants of War – UNODA' <<https://disarmament.unoda.org/ccw-protocol-v-on-explosive-remnants-of-war/>> accessed 1 December 2023.

<sup>176</sup> Convention on Cluster Munitions 2008.

<sup>177</sup> *ibid.*

<sup>178</sup> 'The Environment and International Humanitarian Law | How Does Law Protect in War? - Online Casebook' (n 62).

<sup>179</sup> *ibid.*

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1994 and reexamined in 2020.<sup>180</sup> Nevertheless, the Guidelines only recommend what parties, particularly states, ought to undertake. These guidelines are not legally binding.<sup>181</sup> The ICRC Study identifies a total of 161 distinct rules that have been considered by its drafters to represent the principles of customary international law.<sup>182</sup> These rules have been determined through a comprehensive analysis of pertinent State practice. The rules were created into six distinct parts.<sup>183</sup> Part III of the ICRC standards is devoted to the protection of the natural environment by imposing rules on particular weapons. It prohibits the use of poisons or poisonous weapons, using chemical or biological weapons, among other weapons.<sup>184</sup> It has outlawed using insecticides as military weaponry. When it comes to using landmines and incendiary weaponry, extra caution has been advised.<sup>185</sup> Rule 43 says that this includes protecting the natural environment as part of the basic rules for how wars should work. Unless it's necessary for military purposes, the rule prohibits destroying the natural environment.<sup>186</sup>

c) International court rulings on wartime environmental crimes

Nine Nazi officers were accused of ruthlessly exploiting Polish woods at the Nuremberg trials after WWII. The Tribunal's pursuit of environmental crimes was the first judicial action against wartime actions in foreign territory, even though the finding was not conclusive. The Nuremberg Tribunal had a major impact on international law, as numerous international legal texts demonstrate.<sup>187</sup> As an occupying power, Uganda was obligated to compensate the Democratic Republic of the Congo for the natural resource exploitation, looting, and pillage that occurred during its occupation, according to the International Court of Justice's ruling in the 2005 case DRC v. Uganda.<sup>188</sup> A policy document on case selection along with prioritising was produced in 2016 by the ICC. According to the report, the prosecutor's office will prioritise crimes involving the unlawful damage of natural habitats, natural resources, or land. It

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<sup>180</sup> Wirthová (n 55).

<sup>181</sup> *ibid.*

<sup>182</sup> Freeland (n 13).

<sup>183</sup> Freeland (n 13).

<sup>184</sup> Freeland (n 13).

<sup>185</sup> 'GUIDELINES ON THE PROTECTION OF THE NATURAL ENVIRONMENT IN ARMED CONFLICT' (*International Committee of the Red Cross*, 25 September 2020) <<https://www.icrc.org/en/publication/4382-guidelines-protection-natural-environment-armed-conflict>> accessed 24 November 2023.

<sup>186</sup> *ibid.*

<sup>187</sup> Jensen (n 153).

<sup>188</sup> Wirthová (n 55).

is commendable that environmental war crimes are receiving attention from international courts.<sup>189</sup>

- c) The Draft principles of International Law Commission (ILC) on protection of the environment in relation to armed conflicts, 2022

The International Law Commission (ILC) coded the draft principles with regard to armed conflicts in 2022<sup>190</sup> and the principles were adopted by the UNGA by adopting resolution 77/104.<sup>191</sup> According to Principle 13, the environment must be conserved and safeguarded in compliance with all relevant international law, especially the laws of armed conflict.<sup>192</sup> It covers environmental preservation, including occupations, before, during, and after armed conflicts.<sup>193</sup> The principles strive to safeguard the environment during armed conflicts by implementing prevention, mitigation, and remediation strategies.<sup>194</sup> The principle also enumerates that when a state may engage in an armed conflict and commits an internationally illicit act that results in environmental damage, that State will bear international responsibility and is obligated to provide full reparations for any and all damages.<sup>195</sup> The principles stipulate that the environment must be preserved and protected in compliance with all relevant international law, including the law of armed conflict. They also direct the use of caution to avoid extensive, long-lasting, and severe environmental harm and restrict employing military tactics and weapons that have the potential to inflict such harm, which is similar to the Geneva Convention and its protocols.<sup>196</sup> Though the resolution is a revolutionary attempt, it still adheres to the previous shortcomings by citing the conditions of severe, long-term, widespread impact on the environment.

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<sup>189</sup> *ibid.*

<sup>190</sup> Daniil Ukhorskiy, 'Environmental Destruction in War: A Human Rights Approach' (*EJIL: Talk!*, 19 June 2023) <<https://www.ejiltalk.org/environmental-destruction-in-war-a-human-rights-approach/>> accessed 17 May 2024.

<sup>191</sup> UN General Assembly (77th, 'Protection of the Environment in Relation to Armed Conflicts' (UN General Assembly 2022) A/77/104, para 12 <<https://digitallibrary.un.org/record/3998322>> accessed 19 May 2024.

<sup>192</sup> 'Draft Principles on Protection of the Environment in Relation to Armed Conflicts (2022)' (International Law Commission 2022) A/77/10 <[https://legal.un.org/ilc/texts/instruments/english/draft\\_articles/8\\_7\\_2022.pdf](https://legal.un.org/ilc/texts/instruments/english/draft_articles/8_7_2022.pdf)> accessed 17 May 2024.

<sup>193</sup> *ibid.*

<sup>194</sup> *ibid.*

<sup>195</sup> *ibid.*

<sup>196</sup> *ibid.*

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**5. Examining the Constraints of Humanitarian Law in Ensuring Comprehensive Safeguard**

The lack of clarity and uniformity in the implementation of global accords like the Rome Statute, ENMOD, and Additional Protocol I hinder the ability of international law to effectively prosecute war crimes related to the environment. Quantifying and monitoring environmental damage is challenging due to a lack of agreement and ambiguous criteria.<sup>197</sup> Between 1990 and 1991, the Gulf War witnessed the intentional destruction of over 600 oil wells in Kuwait by the Iraqi army during their withdrawal.<sup>198</sup> This act led to substantial pollution and claims for environmental damages exceeding USD 85 billion. These events raised concerns about the effectiveness of these laws.<sup>199</sup> It was suggested that the forty-sixth session of the UN General Assembly should focus on the exploitation of the environment as an instrument of warfare.<sup>200</sup> Quantifying and monitoring environmental damage is challenging due to a lack of agreement and obscure criteria.<sup>201</sup> The inclusion of the terms "widespread, long-term, and severe" in conjunction in Protocol I of the Geneva Convention, 1949 is of great importance. All three elements must be met for a Protocol breach.<sup>202</sup> Thus, World War I and II destruction would not have encountered this obstacle. As per the AP I, once these components are properly established, criminal penalties will only be imposed if it can be demonstrated that the individual acted deliberately and with knowledge that the attack would result in the unlawful environmental harm.<sup>203</sup> The UN has defined "knowledge" as the state of being aware that the desired effects of an act would occur. Furthermore, it has established that this awareness can be deduced from pertinent facts and situations.<sup>204</sup> It should be emphasized that there is no legal responsibility for causing extensive, enduring, and significant harm to the environment due to negligence or carelessness. Consequently, those who are proven to have acted negligently will not be subject to any form of punishment.<sup>205</sup> For instance, Saddam

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<sup>197</sup> Blake Lara, 'The Failure of Environmental International Law During Times of War' (2015) 4 <<http://scholarworks.law.ubalt.edu/ubjld/vol4/iss2/3>> accessed 24 November 2023.

<sup>198</sup> Olof Lindén and others, 'The Environmental Impacts of the Gulf War 1991' <<https://pure.iiasa.ac.at/id/eprint/7427/1/IR-04-019.pdf>> accessed 11 May 2024.

<sup>199</sup> 'The Environment and International Humanitarian Law | How Does Law Protect in War? - Online Casebook' (n 62).

<sup>200</sup> Jensen (n 153).

<sup>201</sup> Lara (n 197).

<sup>202</sup> *ibid.*

<sup>203</sup> *ibid.*

<sup>204</sup> *ibid.*

<sup>205</sup> *ibid.*

Hussein's acts were not held to be in direct violation of the ENMOD convention. Numerous observers have determined that Hussein's intentional damage of the environment due to the failure to attain quantum of damage criteria did not violate the laws.<sup>206</sup> Additional Protocol II of the Geneva Convention lacks specific provisions for environmental protection in non-international armed situations.<sup>207</sup> The ICRC Guidelines of 2020 only offer recommendations of what parties, particularly states, ought to undertake. These guidelines are not legally binding.<sup>208</sup> The 1980 CCW is merely a broad framework with provisions that encompass the Protocols. It doesn't include any clauses that specifically forbid using any particular weapon.<sup>209</sup> The Protocols appended to the Convention are concerned with provisions that prohibit or restrict the use of specific weapons. It states in Article: 4 that, states may only be bound by it if they indicate while ratification, acceptance, or approval, or accession that they agree to be bound by any two of the convention's protocols.<sup>210</sup> Therefore, it provides no binding effect and possesses a lucid space in the convention to surpass the obligation of the convention. The Nuremberg trials demonstrated how international laws fail to prosecute environmental war crimes. Environment protection legislation is first unclear and inconsistent. Lack of regulation plagues certain military activities. These laws do not address conflict-related collateral damage, and intentional environmental damage is still legal as long as it does not violate any laws. There is no clear standard for militants to assess the military purpose against environmental impact, making the proportionality rule vague. The fact that only countries that have ratified these international agreements can use them is another drawback.<sup>211</sup> Moreover, international law prohibits passive environmental warfare only if it has serious, long-term environmental effects.<sup>212</sup> It provides a fluid pathway for the perpetrators to harm the environment in a distinctly passive manner.

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<sup>206</sup> Jensen (n 153).

<sup>207</sup> Enas Al-zahrani, 'The Effectiveness of International Humanitarian Law (IHL) in the Environmental Protection at Armed Conflict Areas' (2018) 69 *Journal of Law, Policy and Globalization* 54 <<https://heinonline.org/HOL/Page?handle=hein.journals/jawpglob69&id=55&div=&collection=>>>.

<sup>208</sup> Wirthová (n 55).

<sup>209</sup> 'Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects. Geneva, 10 October 1980.' <<https://ihl-databases.icrc.org/en/ihl-treaties/ccw-1980>> accessed 24 November 2023.

<sup>210</sup> *ibid.*

<sup>211</sup> Lara (n 197).

<sup>212</sup> Jensen (n 153).



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The Rome Statute and ICC failed to clarify environmental protections during wartime. It prohibits the deliberate causing of damage to the environment during wartime, classifying it as a "war crime." However, prosecution can only occur if this act is carried out as part of a scheme or policy. Further, the Rome Statute adopted Protocol 1 of CCW without defining the terms; widespread, long-term, and severe.<sup>213</sup> The limited jurisdiction, lack of environmental law expertise, and emphasis on fines and imprisonment rather than reimbursement and civil liability are some of the reasons why the ICC has failed to effectively deter environmental crimes during armed conflicts.<sup>214</sup> The environmental degradation that occurs during times of conflict is a very minor subset of these transgressions and, consequently, is frequently disregarded. The judges comprising the ICC generally lack competence in environmental law, therefore diminishing the likelihood of reaching a sound judgment.<sup>215</sup> The ICC exclusively hears cases involving natural persons. The military and state cannot be held responsible for environmental damage due to this restriction. Detention time and fines are the implemented penalties; civil obligations to repair environmental damage are not included.<sup>216</sup>

It is evident that the IHL does not prioritise environmental preservation as its main focus. The safeguards provided are inadequate, as fragile as a house of cards, due to glaring vulnerabilities, and the indirect protections are only acknowledged as a secondary aim.

## **E. THE IMPACT OF ENVIRONMENTAL RIGHT VIOLATION ON FIRST AND SECOND GENERATION HUMAN RIGHTS**

In addition to highlighting the fundamental right to life and the need for a clean and healthy environment, Civic (1997)<sup>217</sup> emphasises that a clean and sustainable environment is required for the full realisation of internationally recognised human rights, as outlined in the ICCPR and ICESCR treaties. The interconnection between economic, social, and cultural rights

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<sup>213</sup> *ibid.*

<sup>214</sup> Lara (n 197).

<sup>215</sup> *ibid.*

<sup>216</sup> *ibid.*

<sup>217</sup> Melanne Andromecca Civic, 'Discovering and Enforcing a Human Right to Environmental Protection' (1997) 13 *Journal of Natural Resources & Environmental Law* 123 <<https://heinonline.org/HOL/Page?handle=hein.journals/jnatrenv113&id=135&div=&collection=>> accessed 2 December 2023.

(second generation) and civil and political rights (first generation) becomes apparent when considering the impacts of environmental destruction in times of war.

### 1. *Nexus between Human Rights and Significance of Environment Preservation during Wars*

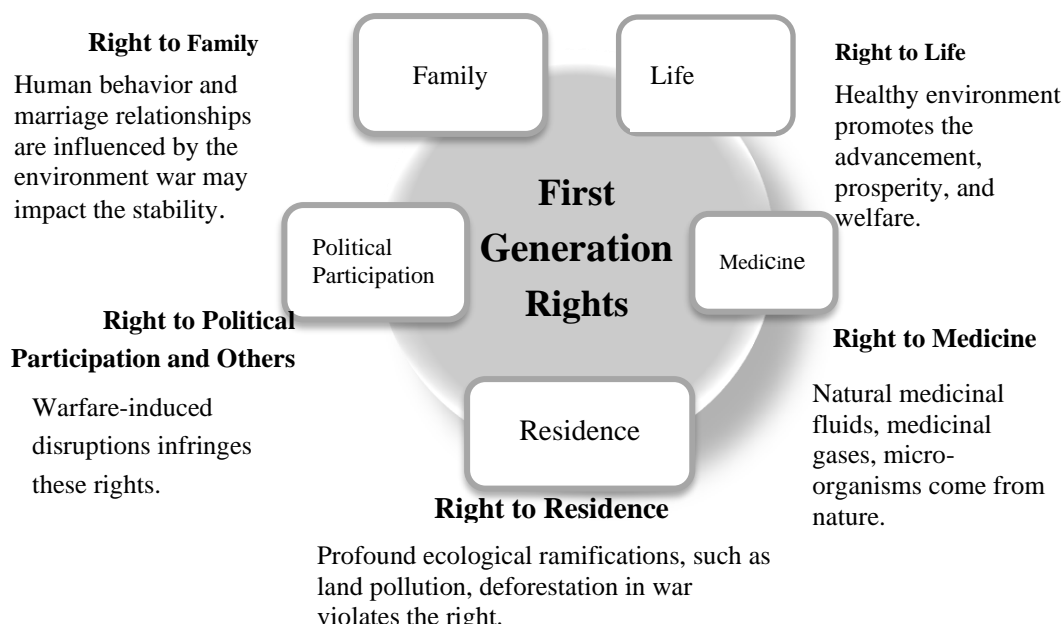


Figure 2: Significant First Generation Right

Given that nature serves as the origin of sustenance, nourishment, and well-being, it is not difficult to establish a correlation between these rights and their dependence on nature. The following table attempts to illustrate the effects that environmental hazards caused by conflict have on these rights.

Impact of Warfare Induced Environmental Destruction on First Generation Rights			
First Generation Rights	Environmental Destruction/ Pollution	Impacts	Status of Right
Right to Life	Air pollution or water source contamination	Asthma, waterborne sickness, other deadly diseases. <sup>218</sup>	Infringed

<sup>218</sup> Mohd Yousuf Bhat and Syed Damsaz Andrabi, 'Right to Life in Context of Clean Environment: It's Significance under Various Laws' (2017) 22 IOSR Journal of Humanities and Social Science 79.

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<b>Right to Medical Needs</b>	Destruction of natural resources, chemical contamination of soil water, air pollution.	Less production, invention of medicine.	Infringed
<b>Right to Choose Residence</b>	Land pollution, deforestation, and climate change.	May result in population relocation and endanger human well-being, lack of habitable places.	Infringed
<b>Right to Family</b>	Land degradation, deforestation, and exploitation of natural resources.	Potentially leads to population relocation and endangering human health. <sup>219</sup> Results in enforced migration, partition from family.	Infringed
<b>Right to Political Participation, Assembly, Association, Property, Freedom of Thoughts and Conscience</b>	Destruction of the environment leads to population enforced displacement and scarcity of essential goods, disruptions to communication, transportation.	The focus transitions to immediate humanitarian requirements, potentially resulting in the postponement or disruption of electoral procedures, to think freely, or protect property.	Restricted

*Table 2 Impacts on First Generation Human Rights<sup>220</sup>*

a) Environment's Role to Protect Right to Life

ICCPR acknowledges and safeguards the fundamental right to life for every individual in its article: 6. The right to life is an inherent and sacrosanct entitlement that remains inviolable, even in the midst of armed conflict.<sup>221</sup> The interconnection between the right to life and the conservation of the environment is recognised, considering the crucial role of a thriving

<sup>219</sup> SQ Hashimy, 'The Agonizing Narrative of Environmental Dilapidation in the Tussle of Armed Conflict; from the Lens of International Humanitarian Laws' (10 March 2023) <<https://papers.ssrn.com/abstract=4383907>> accessed 30 November 2023.

<sup>220</sup> Authors synthesis from the International Covenant on Civil and Political Rights, 1966.

<sup>221</sup> International Covenant on Civil and Political Rights, 1966.

environment in fostering progress, prosperity, and well-being for nations, societies, and individuals. For instance, air pollution and water source contamination can lead to health issues like asthma or waterborne diseases, thereby endangering the right to life.<sup>222</sup> A considerable number of state constitutions specify the right to a healthy environment and the responsibilities of both the government and citizens to protect it.<sup>223</sup> Many legal systems make it evident that human rights and environmental protection are related since air and water pollution causes a shortage of food and medication, therefore endangering people's right to life.<sup>224</sup> To fully exercise human rights, particularly the right to life, it is imperative to have a sound environment.

#### b) Environment Provides Resources for Medical Needs

Natural medicinal resources mean medicinal substances acquired from direct natural resources from the environment. Numerous characteristics of natural medicinal fluids, medicinal gases make them useful for treating problems of the gastrointestinal tract, respiratory system, bones, skin, and soft tissues.<sup>225</sup> Microorganisms in water, soil, and symbiotic relationships have helped synthesize antibiotics and other drugs. Multiple synthetic chemicals make it necessary to seek non-pharmacological methods and natural healing resources that are more human-friendly. Natural resources as medications and therapy shorten treatment time and improve efficacy for various diseases.<sup>226</sup> More than sixty licensed medications created in the fields of anti-infective and anti-cancer therapies come from natural sources.<sup>227</sup> ACE inhibitors were developed as a result of teprotide, which was found in pit viper venom.<sup>228</sup> Remarkably, destruction of natural resources can weaken governing bodies, making them less capable of settling social issues and providing public services such as medical care and education. Hence, widespread

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<sup>222</sup> Bhat and Andrabi (n 218).

<sup>223</sup> *ibid.*

<sup>224</sup> Lewis (n 24).

<sup>225</sup> J Ziemska and others, 'Natural Medicinal Resources and Their Therapeutic Applications' (2019) 70 *Roczniki Państwowego Zakładu Higieny* <<http://agro.icm.edu.pl/agro/element/bwmeta1.element.agro-8b7305e5-da50-45ab-a927-d2982e39d5b2>> accessed 2 December 2023.

<sup>226</sup> *ibid.*

<sup>227</sup> Gordon M Cragg and David J Newman, 'Drugs from Nature: Past Achievements, Future Prospects' in Maurice M Iwu and Jacqueline C Wootton (eds), *Advances in Phytomedicine*, vol 1 (Elsevier 2002) <<https://www.sciencedirect.com/science/article/pii/S1572557X02800101>> accessed 2 December 2023.

<sup>228</sup> *ibid.*

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environmental devastation will adversely impact the availability of resources for treatment, thereby infringing upon the global right to access medication.

d) Environment Protecting Right to Choose Residence

According to Article 12 of the ICCPR, all individuals duly present within the jurisdiction of a state are entitled to freedom of movement and the ability to select their place of residence within that jurisdiction.<sup>229</sup> The entitlement to residency during times of war is intricately linked to the environment. War has profound ecological ramifications, such as land pollution, deforestation, and climate change that may result in population relocation and endanger human well-being.<sup>230</sup> If the environment is highly polluted during conflicts, civilians will be unable to protect their rights to residence due to lack of habitable places. For example, during the Lebanon war around 25% of the population experienced displacement, a violation of their right to residence.<sup>231</sup> Furthermore, the widespread destruction of residential buildings led to displaced individuals and families residing in overcrowded, hazardous environments with limited access to clean water, food, sanitation, and healthcare facilities.<sup>232</sup> This situation is associated with violations of the right to food, healthcare, and life.<sup>233</sup> The Syrian Civil War is another incident of violent environmental pollution and civilian displacement. The Wak Foundation for Afghanistan surveyed ethnic groups in 1996-97, and according to the information provided, there was an enormous influx of people from Afghanistan in 1979 following the invasion of Afghanistan by the Soviet Union.<sup>234</sup> Furthermore, following the year 1992, internal conflicts compelled a significant number of individuals to abandon their residences in Konduz, Baghlan, Balkh, Fryab, and Tawzjan provinces and relocate to foreign countries.<sup>235</sup> The conflicts between the Taliban and Uzbeks forced a significant number of Pashton and Turkman individuals to relocate from Togab to Nangrahar following the year 1992.<sup>236</sup>

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<sup>229</sup> International Covenant on Civil and Political Rights, 1966.

<sup>230</sup> Hashimy (n 219).

<sup>231</sup> 'Israel/Lebanon/Hezbollah Conflict in 2006 | How Does Law Protect in War? - Online Casebook' <<https://casebook.icrc.org/case-study/israellebanonhezbollah-conflict-2006>> accessed 16 December 2023.

<sup>232</sup> *ibid.*

<sup>233</sup> *ibid.*

<sup>234</sup> Nafees Mohammad, Zahidullah and Khan Ghulam, *Environmental Degradation Due to War in Afghanistan: A Review* (2018).

<sup>235</sup> *ibid.*

<sup>236</sup> *ibid.*

## e) Environment's Role to Protect Right to Family

The right to family is recognised as a fundamental human right in ICCPR.<sup>237</sup> This provision affirms that the family, being the fundamental and intrinsic institution of society, deserves protection from both the government and society at large. The Convention on the Rights of the Child emphasises the criticality of providing children with a familial environment characterised by happiness, affection, and understanding.<sup>238</sup> The geophysical environment and family stability are also related since human behaviour and marriage relationships are influenced by the environment.<sup>239</sup> War-induced environmental devastation causes land degradation, deforestation, and exploitation of natural resources, potentially leading to population relocation and endangering human health.<sup>240</sup> The environmental harm resulting from warfare can have cross-border ramifications, as pollutants can be transported across frontiers, posing a hazard to the well-being of residents in adjacent areas which may result in violation of family rights.<sup>241</sup>

## f) Analysis of Other Civil and Political Rights

Destruction of the environment during hostilities leads to population displacement and scarcity of essential goods. Warfare-induced disruptions to communication, transportation, and societal operations might hinder the ability of citizens to engage in electoral procedures. Under these conditions, the focus transitions to immediate humanitarian requirements, potentially resulting in the postponement or disruption of electoral procedures, thereby restricting individuals' capacity to exercise their right to political participation.<sup>242</sup> The potential for significant environmental degradation to disrupt political and economic conditions is expected to have adverse effects on various civil society rights, including but not limited to the freedoms of assembly, association, privacy, and thought and conscience.<sup>243</sup>

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<sup>237</sup> Article 23.

<sup>238</sup> Robin Kimbrough-Melton, 'The Right to a Family Environment for Children of Prisoners' in James Garbarino and Garry Sigman (eds), *A Child's Right to a Healthy Environment* (Springer 2010) <[https://doi.org/10.1007/978-1-4419-6791-6\\_8](https://doi.org/10.1007/978-1-4419-6791-6_8)> accessed 2 December 2023.

<sup>239</sup> Ahmed Aref, 'Family Stability and Environmental Sustainability: An Interdependent Nexus' in Essam Heggy, Veronica Bermudez and Marc Vermeersch (eds), *Sustainable Energy-Water-Environment Nexus in Deserts* (Springer International Publishing 2022).

<sup>240</sup> Hashimy (n 219).

<sup>241</sup> Mahbubul Islam, 'Protecting the Environment during Armed Conflict: Fragilities in the Provisions of International Humanitarian Law' (2016) 22 Bangladesh Journal of Legal Studies.

<sup>242</sup> International Covenant on Civil and Political Rights, 1966.

<sup>243</sup> *ibid.*

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## **2. Environment's Role in Economic, Social and Cultural Rights**

The ICESCR has established protections for various aspects of a dignified standard of living, encompassing entitlements such as access to sufficient food, clean water, adequate housing, healthcare, and employment.<sup>244</sup> Article 8 of the UN Declaration on the Right of Development emphasises the responsibility of states to take appropriate actions at the domestic level in order to achieve the right to development.<sup>245</sup> Without preserving the environment, these rights cannot be safeguarded. The following table attempts to illustrate the effects that environmental hazards caused by conflict have on these rights.

<b>Impact of Warfare Induced Environmental Destruction on Second Generation Rights</b>			
<b>Second Generation Rights</b>	<b>Environmental Destruction/ Pollution</b>	<b>Impacts</b>	<b>Status of Right</b>
<b>Disposal of Natural Wealth</b>	Bombing, deforestation, usage destructive weapons.	Depletion of natural wealth	Infringed
<b>Right to Work</b>	Destruction of natural resources, chemical contamination of soil water, air pollution.	Economy becomes unstable. Hence, labour cost reduction leads to layoffs, decreased employment opportunities, poor working conditions, and an unfavorable work environment.	Infringed
<b>Right to Culture</b>	Destruction of cultural heritages, deforestation, and climate change.	May result in population relocation; endanger human well-being, lack of habitable places, destruction of cultural resources.	Infringed
<b>Right to Food and Cloth</b>	Land degradation, deforestation, and exploitation of natural resources. Disruptions in	Cultivation and cloth production may come to halt due to lack of resources. Lack of safe water	Infringed

<sup>244</sup> International Covenant on Economic, Social and Cultural Rights 1966.

<sup>245</sup> Declaration on the Right to Development 1986.

	agriculture, water and land degradation.	may result due to chemical contamination.	
<b>Physical and Mental Health</b>	Wartime explosions, nuclear weapons, and chemical agents pollute air and water.	Causes respiratory disorders, water-borne diseases, trauma, insomnia, anxiety, sadness, wrath and other health issues.	Infringed
<b>Scientific Progress</b>	Usage of nuclear weapon, toxic warfare chemicals harms the ecology, depleting its resources.	Unpredictable bio-diversity advancement impairs ecosystems and resource access, harms ecology impeding scientific progress.	High Probability of Infringement
<b>Right to Education</b>	Air pollution, chemical contamination of water, deforestation.	May cause displacement, resource scarcity. Ex: Inadequate paper, pencils. ,Survival will take precedence over education	Infringed

Table 3: Impacts on Second Generation Human Rights<sup>246</sup>

a) Environments Role to Safeguard the Right to Freely Dispose of Natural Wealth

The right in question is acknowledged in Article 1 of the ICESCR.<sup>247</sup> It is important to note that a healthy environment is the sole prerequisite for individuals to obtain natural resources and wealth. Additionally, the sustainable management of these resources guarantees their availability in the future. Consequently, warfare not only causes environmental devastation but also depletes vast quantities of natural resources through bombing, deforestation, using destructive weapons; that is likely to impede the right to dispose of natural resources.

b) Environment Protects the Right to Work and the Right to Safe and Healthy Work Conditions

The ICESCR delineates these rights in Articles 6 and 7.<sup>248</sup> Safeguarding employment and providing safe and healthy working conditions requires an ideal environment. Understanding the relationship among the environment and working conditions, work availability, requires

<sup>246</sup> Author's synthesis from the Covenant on Economic, Social and Cultural Rights, 1966.

<sup>247</sup> International Covenant on Economic, Social and Cultural Rights, 1966.

<sup>248</sup> *ibid.*



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examining a country's economic state, employer profit-loss equation, and employment opportunities. War destroys natural resources, making an economy unstable and crippling domestic industries. Hence, labour cost reduction leads to layoffs, decreased employment opportunities, poor working conditions, and an unfavorable work environment.

c) Environmental Impact on Right to Culture

ICCPR in its article: 27 mentions that, individuals who are part of ethnic, religious, or linguistic minorities in some states, must not be deprived of their right, to partake in their own cultural practices, freely express and observe their own religious beliefs, and utilize their own language.<sup>249</sup> Cultural rights are upheld through the protection of the environment. This is because cultural heritage is intricately interwoven to the environment as well as its sustainable advancement. The importance of environmental sustainability in relation to cultural heritage is recognised by the Convention for the Safeguarding of Intangible Cultural Heritage.<sup>250</sup> Conserving cultural heritage is necessary to safeguard history, ethnic identity, and the collective remembrance of diverse social groups.<sup>251</sup> The utilisation of active environmental monitoring might further enhance the preventive protection of cultural resources.<sup>252</sup> Preserving the environment guarantees the protection of cultural rights for both current and future generations.

d) Environment as a provider of clothing, and food

War's environmental destruction may infringe the right to clothes and food, essential to a decent life.<sup>253</sup> Wartime intentional damage to crops, fields, and food distribution infrastructure may produce a food crisis. Chemicals may additionally contaminate water, infringing the right to clean water. Disruptions in agriculture, water and land degradation, and community dislocation may affect food and cloth production. Wars can destroy personal belongings through bombing and displacement. Conflict-affected people may have problems housing and dressing. War may destroy cotton production resources, stopping garments production.

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<sup>249</sup> International Covenant on Civil and Political Rights, 1966.

<sup>250</sup> Ubertazzi Benedetta, 'SAFEGUARDING INTANGIBLE CULTURAL HERITAGE AND THE ENVIRONMENT' (2020) 64 Правоведение 124 <<https://cyberleninka.ru/article/n/safeguarding-intangible-cultural-heritage-and-the-environment>> accessed 30 November 2023.

<sup>251</sup> Angela Giovanini Moura, 'A Proteção Internacional Do Patrimônio Cultural' (2012) 12 Cadernos de Direito 91 <<https://www.metodista.br/revistas/revistas-unimep/index.php/cd/article/view/1003>> accessed 30 November 2023.

<sup>252</sup> Mario Casillo and others, *Predictive Preservation of Historic Buildings through IoT-Based System* (2022).

<sup>253</sup> International Covenant on Economic, Social and Cultural Rights, art: 11.

Economic damage will hinder affected nation from paying customs and importation fees for apparel. Economic harm will prevent affected nation from paying customs and importation costs to import clothing.

e) The right to the enjoyment of the highest attainable standard of physical and mental health

Article 12 of ICESCR guarantees this right.<sup>254</sup> Wartime explosions, nuclear weapons, and chemical agents pollute air and water, causing respiratory disorders, water-borne diseases, and other health issues. For instance, sulfur mustard is an extremely corrosive substance that causes severe burns to affected areas of the skin, eyes, and respiratory tract.<sup>255</sup> Dislocation and forced eviction of residents will force them to live in temporary shelters or overcrowded refugee camps, which may spread infectious disease. War's destruction of nature, residence, may generate long-term impacts like repeated memories, trauma, insomnia, anxiety, sadness, wrath, and dysfunctional coping mechanisms. Conflict-affected youth are at risk for post-traumatic stress disorder, anxiety, depression, and dissociative disorders.<sup>256</sup>

f) Right to enjoy the benefits of scientific progress, research and its applications

War pollutes, destroys trees, and ruins ecosystems, affecting environmental studies. Long-term ecosystem monitoring, biodiversity, and environmental degradation may challenge scientists. Environmental degradation and resource depletion may prevent future generations from benefiting from science. Wartime environmental damage impairs ecosystems and resource access, impeding scientific progress. Over time, toxic warfare chemicals harm the ecology, depleting its resources. Wartime environmental protection is crucial for scientific progress and implementation.

g) Analysis of Other Economic, Social and Cultural Rights

A disruption in the right to education may occur as a consequence of environmental degradation caused by warfare, such as severe air pollution, chemical contamination of water, or food scarcity may cause displacement. An additional factor contributing to the infringement upon the right is resource scarcity; the violent destruction of forests and chopping of trees are

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<sup>254</sup> *ibid.*

<sup>255</sup> Doran (n 75).

<sup>256</sup> Nityanand Jain and others, 'War Psychiatry: Identifying and Managing the Neuropsychiatric Consequences of Armed Conflicts' (2022) 13 *Journal of Primary Care & Community Health* 21501319221106625 <<https://doi.org/10.1177/21501319221106625>> accessed 3 December 2023.

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likely to result in inadequate paper and pencil production. Moreover, in the event that individuals are subjected to severe environmental injury, survival will take precedence over education. Ultimately, this would constitute a breach of the right to education. As a consequence of severe pollution, deforestation, individuals will no longer have the ability to select an open green space, which in turn will restrict their right to rest and recreation.<sup>257</sup> Therefore, it is evident that environmental rights infringement amidst warfare will severely violate second-generation human rights.

## F. PROSPECTIVE WAY OUTS

The preceding sections of this paper have extensively examined the detrimental impact of warfare on the environment. The primary objective has been to underscore the importance of preserving the environment and emphasize its significance as a human rights concern. Now, the focus will shift towards exploring potential solutions to the aforementioned problems and analysing ideas aimed at mitigating the detrimental effects of war on the environment.

### ***1. Enactment of a Convention titled, ‘Convention on Environment Preservation during Warfare and Preventing Incidental Human Rights Violations of Natural Habitants’***

A proposition may be presented to establish this convention, accompanied by a well-developed document that clearly delineates its goals, duties, and liabilities. During the discussions, participating states can reach an agreement on the convention language by addressing issues, reconciling divergent viewpoints, and reaching common ground. The convention may have the potential to have worldwide legal effects, which can be enforced in a stated manner. This convention will aim to protect the environment during and after armed conflicts, while also preventing any unintentional violations of human rights. The treaty may also impose trade restrictions on states that engage in environmental harm during wars and embrace the notion of the 'Polluters Pay' principle having a binding effect.

Numerous researchers, organisations, and states have also supported the idea of a ‘fifth’ Geneva Convention that specifically addresses environmental issues. Additionally, they have assessed the practicality of the expanding domain of environmental law worldwide. It is crucial

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<sup>257</sup> International Covenant on Economic, Social and Cultural Rights.

to address the matter comprehensively, given the proliferation of detrimental advancements that deter the environment. A non-derogating clause may ensure the convention's binding effect, precise provisions for protecting the environment during wars, specifically addressing the utilisation of the environment as a strategic tool, and a comprehensive definition of environmental genocide may be included.

## ***2. Establish a 'Specialized Environmental Tribunal'***

The creation of a distinct and autonomous tribunal dedicated to prosecuting war crimes pertaining to the environment may tackle some of the prevailing issues. This tribunal may adhere to international laws concerning environmental preservation and impose appropriate penalties for such crimes, considering their incidental violation of human rights, both presently and potentially in the future. Firstly, an international treaty may be formulated to establish the legal framework and delineate the jurisdiction, organization, functions, and processes of the tribunal. The treaty may encompass exhaustive definitions of 'environmental crimes' and 'environmental genocide' and have a globally applicable impact. When convicting a perpetrator, not only obvious damages but also the potential harm to nature, which could lead to disastrous consequences in the future, may be evaluated. It is necessary to build systems for collaborating with other international courts and institutions. Additionally, a monitoring mechanism may be established to monitor the activities of the tribunal.

## ***3. Eliminate the Jurisdiction Dilemma of Existing International Courts:***

International law should have broad enforcement without differentiation based on the parties who entered into the agreement. The main disadvantage of ENMOD and Additional Protocol-I is that they do not apply to countries that have not signed or ratified the agreement.<sup>258</sup> The jurisdictional constraints of international tribunals should not apply to the concerns of CBRN weapons. The criminals have frequently invoked these jurisdictional limitations as a protective measure. Countless incidences of environmental destruction, the employment of weapons, and the production that pose a constant threat to the environment are not brought before international courts due to such limitations. In the *Marshall Island v. India* (2016)<sup>259</sup> case, the

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<sup>258</sup> Lara (n 197).

<sup>259</sup> *Marshall Islands v India* [2016] I.C.J 255.

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Marshall Islands claimed that the parties' comments and behaviour before and during the application submission indicated a dispute over customary law responsibilities for nuclear disarmament and the end of the weaponry race. The Marshall Islands claimed that India violated its obligations under customary international law by failing to negotiate nuclear disarmament and by taking steps to expand and improve its nuclear capabilities. It also claimed that India violated its obligations to end the weaponry race by taking steps to increase its nuclear capabilities.<sup>260</sup> The challenge to jurisdiction submitted by India, arguing the absence of a conflict between the parties, is upheld by a majority of nine votes to seven of the International Court of Justice. Additionally, a majority of ten votes to six determines that the matter is inadmissible on its merits.<sup>261</sup>

### ***3. An Effort to Provide Indemnification to States Affected***

Initiatives may be taken to create a global fund in order to provide economic assistance to the war affected countries to provide funding to restore their damaged ecology caused by warfare, whether international or civil, if the impact is such that the country is unable to overcome the impact. Initially, a thorough environmental assessment may be carried out to ascertain the repercussions of warfare in the concerned nations. Secondly, state governments, NGOs, humanitarian organisations, and environmental groups may form an alliance. Thirdly, a fundraising strategy may be adopted. The scheme may involve encouraging corporate social responsibility and offering stakeholder-incentives to involve the private sector.

### ***4. Forge a Connection between Environmental Protection and Global Trade***

To enhance efficiency, it is imperative to establish regulations that secure the complete endorsement of every nation that has already ratified the Rome Statute.<sup>262</sup> This may entail enforcing repercussions for noncompliance, such as imposing economic sanctions, trade bans, or reducing aid, in the event that nations decline to extradite individuals sought by the ICC.<sup>263</sup>

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<sup>260</sup> *ibid.*

<sup>261</sup> *ibid.*

<sup>262</sup> Lara (n 197).

<sup>263</sup> *ibid.*

**5. Enhance Current Global Accords**

In order to effectively safeguard the environment during periods of conflict and ensure accountability for those responsible for environmental harm, it is imperative to modify the current framework of international law.<sup>264</sup> To ensure that international law functions effectively, the AP I and ENMOD should be modified. It is crucial to provide precise and consistent definitions for phrases like ‘widespread’, ‘long-term’, and ‘severe’. Interpreting these concepts accurately will help avoid any misunderstandings. Modifications must be included to provide protection to secondary harm to natural surroundings.<sup>265</sup> Article 35(3) of AP I needs to be changed to lower the requirement of responsibility for damage to the environment. Moreover, ENMOD should stipulate that any deliberate or unintentional activity that results in harm to the natural surroundings is considered a breach, irrespective of whether it takes place during periods of warfare or tranquilly.<sup>266</sup>

**6. Prohibition of Production of Hazardous Weapons Resulting in Ecological Devastation**

The most destructive weapons are those that can cause extensive harm and are indiscriminate, such as nuclear, chemical, and biological weapons, as well as specific categories of explosives. Despite the widespread commitment of many states to disarmament, there are several states that retain possession of these weapons.<sup>267</sup> The presence of these armaments endangers the possibility of devastation and the spread of weaponry to other nations. The process of restoring the environment following the application of hazardous military weaponry is likely to be much more arduous and expensive.<sup>268</sup> Furthermore, disassembling these weapons would prevent any potential future damage to the environment.<sup>269</sup>

**F. CONCLUSION**

Environmental crimes refer to intentional acts committed during armed conflicts with the ill intent of causing significant, long-lasting, or catastrophic damage to the natural environment. The environmental impact of the ongoing conflicts around the world emphasises

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<sup>264</sup> *ibid.*

<sup>265</sup> *ibid.*

<sup>266</sup> *ibid.*

<sup>267</sup> *ibid.*

<sup>268</sup> *ibid.*

<sup>269</sup> *ibid.*

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the importance of investigating and implementing efficient strategies to protect the environment during all armed conflicts. The study presents concrete proof demonstrating how the evolution of military techniques has a disruptive impact on the environment. Thus, a connection have been established between the protection of both first- and second-generation human rights and the preservation of the environment during times of war, emphasising the delicate balance between environmental maintenance and human rights violations. The inadequacy of humanitarian laws in safeguarding the environment is a contributing factor to the precarious state of environmental rights and human rights issues in the aftermath of conflicts. The paper presents some propositions aimed at addressing the current situation. The research may provoke a new perspective on environmental protection and will incite a discussion to widely acknowledge the necessity of implementing new legislation to effectively defend the environment and prevent inadvertent human rights violations. These measures must encompass the prosecution of individuals responsible for environmental destruction during times of war and those who incite conflicts. The paper seeks to bridge the gap between the environmental challenges and the actionable steps required to address them. By engaging in a critical analysis of existing knowledge and exploring novel ideas, it may contribute to a more sustainable and responsible approach to warfare, minimizing its adverse effects on the environment. However, the sole way to mitigate war's environmental consequences is to avoid war altogether. Deterring conflicts from escalating into violence, addressing the root causes of war, and enhancing the framework for peace can achieve this.