The Polymorphic Environmental Impact of the USSR and US Wars on Afghanistan: A Forgotten Prism of International Law

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The wars in Afghanistan, first by the USSR (1979-1989) and later by the US (2001-2021), have left indelible marks on the country's environment. These armed conflicts have resulted in widespread ecological damage, affecting land, water, and air quality. The US military's largest base in Afghanistan, Bagram Airfield, and the destruction of the agrarian system serves as a case study for the environmental impact of military activities. This paper explores the multifaceted environmental impacts of the USSR and US-led Coalition Forces interventions in Afghanistan, and examines these impacts through the lens of international law. The analysis highlights the long-term ecological consequences, the legal frameworks governing wartime environmental protection, and the current gaps in international legal responses to environmental degradation caused by armed conflicts. Concepts of International Humanitarian Law (IHL) and environmental treaties like the 1977 ENMOD Convention

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and Geneva Protocols have been discussed for their inadequacies and calling for substantial reforms for better protection of the environment during conflicts.

Keywords. Environmental Impact, Armed Conflict, Afghanistan, International Humanitarian Law, International environmental crime

Introduction

War has always been a catalyst for destruction, but its tools have evolved dramatically over time. From the rudimentary bows and arrows crafted from forest timber to the devastating nuclear, chemical,[1] and intelligent technologies of today, the methods of warfare have grown increasingly destructive not only to human life but also to the environment.[2] The environmental toll of prolonged conflict is starkly evident in Afghanistan, a nation that has endured decades of warfare. From the Soviet invasion in 1979 to the U.S.-led intervention in 2001, the country has suffered extensive ecological degradation, including the loss of biodiversity, soil erosion, water contamination, and air pollution. Yet, the legal responsibility for such environmental harm remains murky.[3] While international humanitarian law (IHL) and principles like ius in bello and ius ad

[1] Thilo Marauhn, "The Prohibition to Use Chemical Weapons", Yearbook of International Humanitarian Law, Vol. 17, No. 25, 2014, available at: https://doi.org/10.1007/978-94-6265-091-6_4; Ahmet Üzümcü, "One Hundred Years of Chemical Warfare and Disarmament: Then and Now", Yearbook of International Humanitarian Law, Vol. 17, No. 9, 2014, available at: https://doi.org/10.1007/978-94-6265-091-6_2...

[2] The era of military adventurism, and widespread incendiary armed conflicts harming the environment, and destroying tangible property. Today, not only in Ukraine, Palestine, and Iraq, but also in Afghanistan, one can clearly see the toxic legacy of dumped weapons and vehicles, the crater-ridden landscape, and the loss of forests, wildlife, and ecosystems.
Article 2(4) of the UN Charter prohibits the use of force against another state.

[3] Zhijie Zhang et al., "The Impact of the Armed Conflict in Afghanistan on Vegetation Dynamics", Science of the Total Environment, Vol. 856, No. 159138, 2023.

bellum prohibit environmental damage during war, their enforcement is riddled with gaps.[4]

The environmental degradation witnessed in Afghanistan was the cumulative result of actions taken by multiple actors not solely foreign militaries, but also Afghan civil war,[5] Afghan National Defense Forces (ANDSF), and Non-States Armed Groups (NSAGs). While this article concentrates on the environmental harm arising from the Soviet invasion in the 1980s[6] and the US-led coalition operations in the 2000s given their scale and the availability of documentation these interventions represent only part of a broader pattern of conflict-induced ecological damage. Notwithstanding the severity and persistence of such damage, current international legal frameworks, including international humanitarian law and international environmental law, have proven inadequate in addressing the environmental consequences of these hostilities. This lacuna raises a fundamental and pressing question: how might international law be developed or reformed to ensure the effective protection of the natural environment during armed conflict, particularly in complex and protracted conflict zones such as Afghanistan?

The lack of clarity on accountability underscores a broader issue: the failure of international law to deter environmental destruction during armed conflict. The scarcity of reliable data on the environmental consequences of wars waged in Afghanistan further

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[4] *International humanitarian law and the challenges of contemporary armed conflicts: Recommitting to protection in armed conflict on the 70th anniversary of the Geneva Conventions*, International Review of the Red Cross, Vol. 101, No. 869, 2019, pp. 9-12.

[5] Following the Soviet withdrawal in 1989, Afghanistan's Mujahideen factions turned their conflict inward, waging a civil war that devastated not only society but the environment. Urban warfare, especially in Kabul, polluted air, water resources, and left a landscape scarred by shelling and fire.

[6] Tareq Formoli, "Impacts of the Afghan–Soviet War on Afghanistan's Environment", *Environ Conservation Journal,* Vol. 22, No. 66, 1995.

compounds the problem.[7] Despite the establishment of the National Environmental Protection Agency (NEPA) in 2005 and subsequent legislative efforts,[8] the country continues to grapple with the ecological fallout of decades of conflict. The destruction of natural resources not only undermines Afghanistan's environmental resilience but also fuels ongoing instability, as competition for scarce resources often reignites violence. This vicious cycle highlights the urgent need for robust legal mechanisms to safeguard the environment during and after conflict.

The current international legal framework reveals significant gaps in addressing environmental degradation resulting from armed conflicts in Afghanistan, particularly during the Soviet invasion in the 1980s and the US-led coalition operations post-2001. Existing provisions under international humanitarian law, such as Articles 35(3) and 55 of Additional Protocol I to the Geneva Conventions,[9] establish thresholds for environmental harm that are exceptionally high, requiring damage to be "widespread, long-term and severe" which renders them practically inapplicable to the cumulative and diffuse environmental destruction experienced in Afghanistan, such as deforestation, soil degradation, and contamination of water sources. Furthermore, major military actors like the United States are not party to these protocols,[10] limiting their applicability. International environmental treaties, including the Convention on Biological Diversity and the Convention to Combat Desertification, are primarily designed for peacetime and lack enforceable provisions

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[7] David Taylor, "Policy: New Environment Law for Afghanistan", *Environmental Health Perspectives,* Vol. 114, No. A152, 2006.

[8] *Ibid.*

[9] "Faculty of Business and Law, Do Articles 35 and 55 of Additional Protocol I to the 1949 Geneva Convention Effectively Protect the Environment during an Armed Conflict?" *Bristol Law School Blog*, 27 November 2023, available at: https://blogs.uwe.ac.uk/bristol-law-school/do-articles-35-and-55-of-additional-protocol-i-to-the-1949-geneva-convention-effectively-protect-the-environment-during-an-armed-conflict/.

[10] George Aldrich, "Prospects for United States Ratification of Additional Protocol I to the 1949 Geneva Conventions", American Journal of International Law, Vol. 85, No. 1, 1991.

during armed conflict. Customary international law offers limited guidance, with norms related to environmental protection in warfare remaining vague and non-justiciable. Post-conflict accountability mechanisms similarly fall short, as there are no binding legal obligations compelling occupying or intervening forces to engage in environmental restoration or provide reparations. Institutional fragmentation exacerbates these deficiencies, as bodies such as the United Nations Environment Programme (UNEP) lack enforcement authority and are reliant on voluntary cooperation.

In addition to these international legal shortcomings, domestic factors have further entrenched the neglect of environmental damage in Afghanistan. Following Soviet withdrawal in 1989,[11] national attention was focused almost exclusively on the perceived victory of the Mujahideen,[12] with no consideration given to assessing or remedying wartime environmental harm. The prevailing national sentiment prioritised political and religious triumph over ecological restoration, leaving the extensive environmental degradation by Soviet forces unrecognised. The subsequent civil war among Mujahideen factions led to the large-scale destruction of urban infrastructure, particularly in Kabul,[13] with no regard for environmental consequences or adherence to international humanitarian law. During this period, no institutional or legal mechanisms existed within Afghanistan to monitor or address ecological harm. Moreover, Afghanistan, as a state, demonstrated prolonged negligence toward environmental governance: although the 2004 Constitution spells out environmental protection, comprehensive environmental legislation was not enacted until

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[11] Conor Tobin, "The United States and the Soviet-Afghan War, 1979–1989 ", Oxford Research Encyclopedia of American History, available at: https://doi.org/10.1093/acrefore/9780199329175.013.832..

[12] Ruchi Kumar & Hikmat Noori, "'The Victory Was so Strong': Afghans Celebrate Soviet Pullout", *Al Jazeera,* 15 February 2019, available at:| https://www.aljazeera.com/news/2019/2/15/the-victory-was-so-strong-afghans-celebrate-soviet-pullout.

[13] Sarah Mendelson, "Internal Battles and External Wars: Politics, Learning, and the Soviet Withdrawal from Afghanistan", *World Politics,* Vol. 45, No. 327, 1993..

2007,[14] leaving a three-year legal gap. The country joined the Rome Statute in 2003,[15] but the issue of environmental accountability for the US-led intervention remains unaddressed, especially following the 2021 US withdrawal and the Taliban's return to power.[16] The Taliban, whose military operations have also contributed significantly to environmental destruction and the collapse of public infrastructure, lack international legal recognition and, consequently, legal standing (locus standi) to pursue environmental claims before international bodies. This combination of international legal deficiencies, domestic institutional absence, political instability, and non-state actor governance has rendered Afghanistan both a victim of environmental degradation and a paradigmatic example of international law's failure to protect the environment during and after armed conflict.

Therefore, this paper explores the complexities of humanitarian law breaches, wartime regulations, and the enforcement of environmental protections. By employing a doctrinal legal approach, the study assesses the effectiveness of existing laws, such as the Fourth Geneva Convention and the Environmental Modification Convention (ENMOD), in mitigating environmental damage.[17] It also proposes actionable recommendations for strengthening international legal frameworks to prevent ecological devastation in future conflicts. In a world where environmental sustainability is increasingly intertwined with global security, addressing the environmental costs of war is not just a legal imperative; it is a moral one.

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[14] United Nations: Information Service Vienna, *Environmental Legislation Comes of Age in Afghanistan -- New Act Signals New Hope to People, Ecology of Country*, 4 January 2006, available at: https://unis.unvienna.org/unis/en/pressrels/2006/afg283.html.

[15] "Afghanistan", *International Criminal Court,* available at: https://www.icc-cpi.int/afghanistan.

[16] "Taliban are back - what next for Afghanistan?", *BBC News*, 8 September 2019, available at: https://www.bbc.com/news/world-asia-49192495.

[17] Lawrence Juda, "Negotiating a Treaty on Environmental Modification Warfare: The Convention on Environmental Warfare and Its Impact Upon Arms Control Negotiations ", International Organization, Vol. 32, 1978.

I. Warfare and Environmental Devastation in Afghanistan

The history of the war in Afghanistan is not limited to the deaths of combatants or civilians; it has also extended to significant environmental damage, which is still being felt by civilians in the post-USSR (1979–1989)[18] and subsequent interventions by the United States-led coalition forces (2001-2021).[19] These damages include respiratory failure, destruction of physical property, and an increase in the frequency of droughts (caused by low precipitation and reduced snowfall, which has increased by 10–25% over the last 30 years).[20] The prolonged proxy war damaged Afghanistan's ecosystem, and the country has less deforestation than the USSR and the USA. For example, the United States' use of pilotless drones to bomb randomly and indiscriminately across Afghanistan, disregarding IHL principles, resulted in ecological harm. There are no resources, initiatives, scientific efforts, or research teams dedicated to surveying and cleaning up the layers of chemical, biological, and medical waste left behind by US and Soviet military installations.[21]

II. Soviet Union–Afghan War (1979-1989)

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[18] Barnett Rubin, "Afghanistan: The Last Cold-War Conflict, the First Post-Cold-War Conflict", in E. Wayne Nafziger, Frances Stewart & Raimo Väyrynen (eds), *War Hunger, and Displacement,* Vol. 2, 2000, available at: https://doi.org/10.1093/acprof:oso/9780198297406.003.0002..

[19] "Human and Budgetary Costs to Date of the U.S. War in Afghanistan, 2001-2022", *Watson Institute for International and Public Affairs - Brown University*, August 2021, available at: https://watson.brown.edu/costsofwar/figures/2021/human-and-budgetary-costs-date-us-war-afghanistan-2001-2022.

[20] The temperatures in Afghanistan have doubled the current global rate and are, on average, 1.8 degrees Celsius higher than those recorded in 1950.

[21] There is no post-conflict environmental assessment to indicate which regions are safe and which agricultural lands remain suitable for harvesting. Additionally, there is no medical survey showing the average age at death prior to the war, nor is there data on post-war changes in life expectancy or increases in death rates due to respiratory issues resulting from the conflict. Furthermore, there has been no funding from the UN, the international community, the USSR, or the US to address or restore the environmental damage in Afghanistan.

The Soviet war caused significant environmental damage, including deforestation, soil erosion, and oil spill pollution. The use of defoliants and heavy artillery by the Soviet military exacerbated these issues, leading to further deforestation and water resource destruction.[22] War-induced air pollution results from greenhouse gas emissions from military vehicles, equipment, and weapons. Since 1979, the Soviet military in Afghanistan has used millions of barrels of oil to power vehicles, causing deforestation and affecting ecosystem services like food production and water quality.[23]

The Red Army's fierce warfare in Afghanistan resulted in significant human deaths and severe damage to the natural and ecological systems, and received less attention. Due to this negligence, there is a dearth of post-war data regarding the Red Army's impact on Afghanistan's ecosystems, with most of the data being based on approximations or "best judgments."[24]

The Soviet takeover of Afghanistan led to a catastrophic battle that damaged the environment and caused health effects for both civilians and those who fought. Agriculture was the main driver of the Afghan economy, employing 67% of the labour force.[25] The Soviet war destroyed farming infrastructure, forcing many farms to abandon and degrading the topsoil. Agricultural productivity fell by almost 70% during the invasion.[26] The conflict also led to the removal of vegetation from highways, demolishing old irrigation systems, and the loss of over 50% of the livestock population, including 9.5 million

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[22] T. Formoli, above note 7.

[23] Randall Hansen, "Drunk on Oil and Gas: The Soviet Invasion of Afghanistan", in Randall Hansen (ed.), *War, Work, and Want: How the OPEC Oil Crisis Caused Mass Migration and Revolution,* 2023. available at: https://doi.org/10.1093/oso/9780197657690.003.0007.

[24] T. Formoli, above note 7.

[25] Julie Lowenstein, *US Foreign Policy and the Soviet-Afghan War: A Revisionist History*, Harvey M. Applebaum '59 Award, 2016, available at: https://elischolar.library.yale.edu/applebaum_award/9.

[26] Tooryalai Wesa, *The Afghan Agricultural Extension System : Impact of the Soviet Occupation and Prospects for the Future*, 2002, available at: https://open.library.ubc.ca/soa/cIRcle/collections/ubctheses/831/items/1.0055586.

sheep and goats. Afghanistan had a greater stocking density ratio before the war. One of the largest environmental disasters in Afghanistan's history was brought about by the legal and illegal export of valuable wood from pistachio woodlands to Pakistan for commercial use, which resulted in a major fall in forests. Afghanistan's ecology, flora, and general health were all impacted by the war devastation. The Afghans and the international community did not take any measures against the Soviet Union to make up for lost time or pay damages. The Afghans who were fleeing disaster saw a ray of optimism with the Soviet Union's withdrawal. Environmental harm was also created by the uncontrolled burning of military garbage in open pits. The Soviet Union's military activities were mainly uncontrolled and unmonitored, which left an environmental legacy in Afghanistan.

III. United States-led War (2001- 2021)

The US has caused significant ecological damage to Afghanistan since 2001, with over 85,000 bombs dropped on the country.[27] The bombardment campaign, including the largest bomb ever used, the "mother of all bombs,"[28] has had devastating environmental ramifications.[29] The military hardware generates greenhouse gas emissions, contaminates the atmosphere, and bombards essential infrastructure with hazardous chemicals.[30] The release of toxic

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[27] Lynzy Billing, "A Toxic Legacy: What America Left Behind In Afghanistan", *Undark Magazine,* 25 September 2023, available at: =https://undark.org/2023/09/25/afghanistan-war-toxic-pollution/.

[28] Laura Tribess, "Afghanistan/US, 'Mother of all bombs'", *How does law protect in war?*, available at: https://casebook.icrc.org/case-study/afghanistanus-mother-all-bombs.

[29] Lynzy Billing, "How America's War Devastated Afghanistan's Environment", *New Lines Magazine,* 25 September 2023, available at: https://newlinesmag.com/reportage/how-americas-war-devastated-afghanistans-environment/.

[30] Galina Barinova, Dara Gaeva & Eugene Krasnov, "Hazardous Chemicals and Air, Water, and Soil Pollution and Contamination", in Walter Filbo et al. (eds), *Good Health and Well-Being*, Vol. 255, 2020, available at: https://doi.org/10.1007/978-3-319-95681-7_48.

chemicals also contributes to water, air, and soil pollution, posing a greater risk than the actual explosion, resulting in irreparable consequences.[31]

Afghanistan's ecosystem suffered from contamination brought on by military operations, testing of armaments, equipment, and protocols, as well as during base restoration and combat operations. Apart from the chemicals employed in warfare, the uncontrolled discharge of substantial heat must be carefully scrutinised, as it appears to accumulate and affect the dispersion and aerodynamics of the airflow. The harm to the environment stems from the attempts to contextualise nuclear warfare and the use of conventional and chemical weapons.[32]

Weapons used by the military that contribute to air pollution include hand grenades, small bombs, cluster bombs, and large bombs. The bombs caused many casualties and fatalities, while the poisons from chemical weapons were intended to irritate and damage targets. Generally speaking, the effects of war on the environment include: changing the ozone layer, modifying the ionosphere, causing earthquakes, deforestation; inciting floods or droughts, using herbicides, starting fires (e.g., using napalm and other agents), seeding clouds, spreading invasive species, eradicating species, storm-making, destroying crops, ecology and ecosystem. One of the enduring legacies of the US war is the environmental degradation it has caused, leaving a profound and lasting impact on the ecosystem. The environment has been severely affected by various factors, including the use of weaponry, troop movements, landmines, deforestation, contamination of water sources, target shooting of

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[31] Hanqing Xu et al., "Environmental Pollution, a Hidden Culprit for Health Issues", *Eco-Environment and Health*, Vol. 31, 2022.

[32] "Humanitarian impacts and risks of use of nuclear weapons", 29 August 2020, *International Committee of the Red Cross,* available at: https://www.icrc.org/en/document/humanitarian-impacts-and-risks-use-nuclear-weapons.

animals, and the consumption of endangered species due to desperation.[33]

IV. The Multifaceted Environmental Consequences of Armed Conflict in Afghanistan

Wars have repercussions. These days, the ravages of conflict extend beyond the pain, relocation, and devastation of people and property. Warfare's far-reaching effects affect the environment directly or indirectly.[34] It is becoming increasingly clear that the environment is a victim of armed conflict. Examining the regions impacted by violence reveals a story of soil poisoning, deforestation, oil pollution, air pollution, and contaminated water supplies. Armed conflict has a negative impact on the ecosystem. Wars can cause environmental harm in two ways: directly, through the deployment of high-explosive weapons, or indirectly, by the release of hazardous chemicals into the environment. Management of the environment and natural resources may be indirectly harmed by military operations and their costs. Furthermore, conflict-related instability results in disrespect for the institutions and laws put in place at the national level to safeguard the environment.

Military waste, including lead, mercury, and dioxins, can cause harmful effects on organs and bodily systems, leading to cancer, congenital anomalies, and kidney and cardiovascular issues.[35] Long-term burn pit exposure can cause various illnesses and infertility across various species. The long-term effects of open-air burn pits on the environment and people may include modification of the biological range of species and the environment. Burning military

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[33] Hailemariam Meaza et al., "Managing the Environmental Impacts of War: What Can Be Learned from Conflict-Vulnerable Communities?", *Science of the Total Environment*, Vol. 927, No. 171974, 2024.

[34] Joanna Santa Barbara, "Impact of War on Children and Imperative to End War", *Croatian Medical Journal*, Vol. 47, No. 891, 2006.

[35] Joshua Reno, Military Waste: The Unexpected Consequences of Permanent War Readiness, available at: https://www.jstor.org/stable/j.ctvp7d49w.

waste can release toxic smoke tainted with dioxins, lead, mercury, and irritating gases, which can harm internal organs and systems.[36] Burn pit exposure can lead to major health problems, such as renal, heart, gastrointestinal, and skin disorders, congenital malformations, and various cancers. Infertility and illness in a variety of creatures can also result from the toxicity, affecting not just humans but the ecosystem as a whole.

V. Landmines

Landmines and unexploded ordnance pose a long-term environmental threat, particularly in war-torn regions such as Afghanistan. The Soviet invasion (1979–1989), the civil wars of the 1990s, and the US-led War on Terror all contributed to this crisis. Landmines are not just a humanitarian issue; they also have devastating environmental consequences. Afghanistan alone has an estimated 10 million landmines, remnants of conflicts spanning decades.[37] These landmines not only maim and kill thousands of civilians and animals every year but also render vast tracts of land unusable for agriculture. Farmers are forced to abandon fertile land, exacerbating food insecurity and economic instability. In provinces such as Helmand, Kandahar, and Nangarhar, thousands of acres of prime farmland remain abandoned due to the presence of unexploded ordnance.

Afghanistan, heavily mined since the 1980s, faces severe ecological and soil damage due to landmines. These mines undermine the economy, disrupt the food chain, and contribute to biodiversity decline. The World Health Organisation found that removing

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[36] Xinyu Wang, Taylor Doherty & Christine James, "Military Burn Pit Exposure and Airway Disease: Implications for Our Veteran Population", *Annals of Allergy, Asthma & Immunology*, Vol. 131, No. 720, 2023..

[37] Suzanne Fiederlein et al., *The Human and Financial Costs of the Explosive Remnants of War in Afghanistan*, 19 September 2019, available at: https://watson.brown.edu/costsofwar/files/cow/imce/papers/2019/Explosive%20Remnants%20of%20War%20in%20Afghanistan_Costs%20of%20War.pdf.

landmines from agricultural fields in Afghanistan could increase food production by 88–200%, providing a potential lifeline for millions of people suffering from malnutrition.

By 2021, only one of Afghanistan's 34 provinces had ever been declared mine-free, though this status was recognised as temporary. The remaining 33 provinces still contained explosive ordnance. Despite this, funding for the nation's mine action industry has been decreasing, going from $113 million (£86 million) in 2011 to $32 million in 2020.[38] The August 2021 Taliban takeover has put these streams at even greater risk since, despite better operating circumstances and access to formerly inaccessible areas, many donors are still hesitant to work with the new administration. Since 1989, landmines have killed or injured over 45,000 Afghan civilians, according to the United Nations Mine Action Service.[39]

However, demining operations are expensive and time-consuming, often requiring decades of work and billions of dollars in funding. The United Nations Mine Action Service (UNMAS) estimates that it would take decades and over $1 billion to fully clear Afghanistan's landmines.[40] In the meantime, the ecological impact continues as wildlife is displaced, soil becomes contaminated with explosives, and forests remain inaccessible due to hidden dangers.[41] Clearing these costly and challenging tasks is challenging in war-torn and impoverished countries.

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[38] "Afghanistan to be mine-impact free in 10 years", *ReliefWeb,* 8 May 2012, available at: https://reliefweb.int/report/afghanistan/afghanistan-be-mine-impact-free-10-years.

[39] Afghanistan - Programmes, *United Nations Mine Action Service,* available at: https://www.unmas.org/en/programmes/afghanistan.

[40] Samuel Hall, "30 Years of Impact: An Evaluation of the Mine Action Programme of Afghanistan", commissioned by UNMAS Afghanistan, November 2021, available at: https://www.unmas.org/sites/default/files/evaluation_report_of_mine_action_programme_of_afghanistan.pdf.

[41] Neil Andersson, Cesar Palha da Sousa & Sergio Paredes, "Social Cost of Land Mines in Four Countries: Afghanistan, Bosnia, Cambodia, and Mozambique", *British Medical Journal*, Vol. 311, No. 718, 1995.

VI. Air Pollution

Air pollution is a growing problem in Afghanistan, and armed conflict has significantly contributed to its worsening. Explosive weapons, military convoys, and diesel-powered aircraft released harmful pollutants, including carbon dioxide, sulfur dioxide, and nitrogen oxides. These vehicles emit harmful levels of carbon dioxide, sulfur dioxide, hydrocarbons, nitrogen oxides, and carbon monoxide. Thousands of people in the region lose their lives to the dust and debris of these weapons every year, and the effects are long-lasting. Air pollution has a major negative impact on human health. In war zones like Afghanistan, military vehicles emit dangerous air pollutants such as carbon dioxide, sulfur dioxide, hydrocarbons, nitrogen oxides, and carbon monoxide. Every year, the detonation of explosive weapons results in hundreds of fatalities and grave health consequences for the local populace. For instance, Kabul, Afghanistan's capital, ranks among the most polluted cities in the world due to a combination of war-related air pollution and rapid urbanisation.[42] The impact of air pollution has been devastating for public health. Kabul hospitals have recorded a 45% increase in respiratory diseases over the last two decades, and children exposed to war-related air pollution have a significantly higher risk of developing asthma and lung infections.[43]

VII. Agriculture

Agriculture relies heavily on a healthy environment, including fertile soil, clean water, and stable ecosystems, to sustain crop production, livestock, and food security. The devastation of Afghanistan's

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[42] Ali Latifi, "Kabul air pollution on a par with world's most polluted cities", *TRTWorld*, 2016, available at https://www.trtworld.com/magazine/kabul-air-pollution-on-a-par-with-world-s-most-polluted-cities-23181.

[43] Omar Hahad, "Burden of Disease Due to Air Pollution in Afghanistan-Results from the Global Burden of Disease Study 2019", International Journal of Environmental Research and Public Health, Vol. 21, No. 2, 8 February 2024, available at: https://doi.org/10.3390/ijerph21020197.

agriculture highlights the profound interplay between environmental degradation and armed conflict and its implications under International Humanitarian Law (IHL). IHL, which governs the conduct of war and seeks to mitigate its humanitarian consequences, includes provisions that protect the environment and civilian infrastructure, such as agricultural systems, from unnecessary harm. IHL also emphasises the protection of objects indispensable to civilian life, such as agricultural land and water systems, which are critical for food security and livelihoods. Afghanistan's agriculture has been devastated by war, with nearly half of its fertile land being rendered unusable due to bombings, chemical contamination, and the destruction of irrigation systems. Afghanistan's war has severely damaged nearly half of its agrarian land and its traditional Karez irrigation system, which has sustained Afghan agriculture for over 3,000 years, threatening its survival as the Karez system is on the brink of disappearing due to frequent bombardments and heavy military vehicles.[44] Contaminated water supplies have impacted the environment and human health. The Soviet invasion (1979-1989) destroyed hundreds of Karez tunnels to deny Mujahideen fighters access to underground water supplies. Consequently, Afghanistan's agricultural production has decreased by half since pre-1979 levels, accounting for 48% of total export revenues.[45] The agricultural sector stagnated after the Soviet Union and US-led invasions, reducing its GDP share from 71% in 1994 to 25% in 2020. Restoring the nutritional status of the land is very costly for a poor country like Afghanistan.

VIII. Deforestation

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[44] Rajat Ghai, "*Will Afghanistan's Centuries-Old 'Karez' System of Irrigation Survive the Taliban*", Down To Earth Magazine, 13 August 2021, available at: https://www.downtoearth.org.in/water/will-afghanistan-s-centuries-old-karez-system-of-irrigation-survive-the-taliban-78451.

[45] Jake Hussona, "The Reverberating Effects of Explosive Violence on Agriculture in Afghanistan", *ReliefWeb*, 13 November 2019, available at: https://reliefweb.int/report/afghanistan/reverberating-effects-explosive-violence-agriculture-afghanistan.

Afghanistan's traditional forest protection has been disrupted by conflict, leading to deforestation and destruction of forested areas and farmlands. In 1970, Afghanistan had 2.8m hectares (6.9m acres) of forest, covering 4.5% of the country. By 2016, this had shrunk to about 1.5%. In Nuristan, a province in eastern Afghanistan, forest cover had reduced by 53% in that time.[46] The Soviet-Afghan War saw Mujahideen fighters bombing forests, while illegal mining and smuggling have led to watershed protection, soil erosion, and biodiversity loss. Poverty, lack of alternative income sources, and lack of environmental awareness contribute to this illegal trade. Deforestation also increases the risk of long-term droughts and frequent floods in Afghanistan.

Between 2001 and 2021, the United States of America launched almost 85,000 bombs on Afghanistan, according to a statistic published in the Progressive magazine.[47] Scientists discovered that the spread of poisons caused plant yields to plummet by half in areas like Nangarhar province, where enormous ordnance air burst bombs, often known as "the mother of all bombs," were dropped. It was discovered that water or the wind might potentially carry these contaminants to other areas. Furthermore, in provinces such as Kunar and Nuristan, entire forests have been cleared, leading to increased landslides, reduced soil fertility, and rising temperatures. Hence, without reforestation efforts, Afghanistan risks turning large portions of its land into permanent deserts.

IX. Natural Habitat

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[46] Kern Hendricks, "A Rare Glimpse into Afghanistan's Spectacular, Vanishing Forests", *Scientific American,* 26 April 2023, available at https://www.scientificamerican.com/article/a-rare-glimpse-into-afghanistans-spectacular-vanishing-forests/.

[47] Mariam Amini, "War, deforestation, flooding: in Afghanistan, they are all linked", *The Guardian,* 14 September 2024, available at: https://www.theguardian.com/world/2024/sep/14/afghanistan-war-deforestation-flooding-climate-change.

Owing to the remarkable variation in the country's topography, climate, and geology, Afghanistan's ecosystems encompass three of the eight biogeographical realms in the world: the Afrotropic, Palaearctic, and Indo-Malayan. Because of this habitat diversity and its strategic location between biological zones, it is one of South Asia's most biologically diverse and ecologically productive nations.[48] Afghanistan's animals and natural environments have suffered irreversible harm due to decades of war, drought, and deforestation that have severely destroyed the country's wetlands. Since drone attacks and other forms of bombardment have changed migratory bird paths, the population of animals and birds has also declined. This demonstrates the long-term effects of environmental deterioration brought on by violence on the local populace. In 2021, conservationists discovered that some of Afghanistan's last remaining snow leopards had disappeared from the Wakhan Corridor, likely due to illegal hunting and habitat destruction.

X. Biodiversity

Afghanistan was once home to diverse ecosystems, but decades of war have severely impacted its wildlife. Key species such as snow leopards, Marco Polo sheep[49], and Persian leopards have declined sharply due to habitat destruction and poaching.[50] War has severely damaged Afghanistan's natural biodiversity "hotspots," leaving nature as a silent victim of the armed conflict. Armed conflict has a serious negative impact on biodiversity throughout all of the provinces and at the regional level, especially when it occurs in areas with a rich biodiversity.[51] Ecological change can be impacted by damage caused

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[48] Miklos Udvardy, "A Classification of the Biogeographical Provinces of the World", *IUCN Occasional Paper*, No. 18.

[49] Marco Polo, *The Travels of Marco Polo*, The Modern Library, 1953.

[50] Aishwarya Maheshwari, "Biodiversity conservation in Afghanistan under the returned Taliban", *Nature Ecology and Evolution*, Vol. 6, pp. 342–343, 2022, available at: https://doi.org/10.1038/s41559-021-01655-1.

[51] Karen Hulme, "Using International Environmental Law to Enhance Biodiversity and Nature Conservation During Armed Conflict", *Journal of International Criminal Justice,* Vol. 20, No. 1155, 2022.

by explosives and bullets, poisonous chemical leaks into waterways and soil, or the violent and long-lasting churning of tank tracks in the ground.[52] There are gaps in the implementation of legal frameworks in countries like Afghanistan.[53] Overgrazing, fuel collection, animal exploitation, and the four-decade war have significantly impacted Afghanistan's biodiversity, affecting a diverse range of species and wetlands. [54]

XI. Customary International Environmental Law in Conflict Zones

Customary International Environmental Law (CIEL) is rooted in the principle of sic utere tuo ut alienum non laedus[55], which prohibits states from causing trans-boundary harm. Key principles include prevention, polluter pays, good neighbourliness, and collaboration. This principle is particularly relevant to Afghanistan, where transboundary environmental harm has occurred, such as river pollution and dust storms affecting neighbouring countries like Iran and Pakistan. However, disagreements persist due to the evolving nature of International Environmental Law (IEL). These principles, embedded in various IEL agreements, aim to protect the environment even during armed conflict. For instance, the Stockholm Declaration's Principle 21 mandates states to prevent environmental harm beyond their borders, which is pertinent in Afghanistan's context, where military operations have led to cross-border pollution and deforestation.

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[52] *Ibid.*

[53] *Ibid.*

[54] Afghanistan is implementing the Rio Conventions through its National Capacity Needs Self-Assessment project, prioritizing protected areas, wetlands, flora development, monsoon-dependent forests, and preserving native landraces to promote sustainable development.

[55] Ignacio Gómez Arriola, "Sic Utere Tuo Ut Alienum Non Laedas", *Michigan Law Review,* Vol. 5, No. 8, p. 673, 1907..

Principle 26 prohibits nuclear weapons due to their destructive impact;[56] although Afghanistan is not a nuclear-armed state, the principle supports international efforts to limit highly destructive technologies in conflict zones. Similarly, the World Charter for Nature and the Rio Declaration emphasise environmental protection during conflicts, though they lack legal enforceability.[57]

Moreover, the precautionary principle, a cornerstone of IEL, is particularly significant in conflict-affected regions like Afghanistan, where environmental degradation, such as the contamination of water sources from military waste, directly impacts human health. The principle remains ambiguous but is crucial for environmental and human health protection, especially in conflict zones where environmental degradation exacerbates health risks.[58] It shifts the burden of proof to those proposing potentially harmful activities, ensuring proactive environmental safeguards.[59] However, its application in armed conflict is complex, particularly regarding proportionality and prudence under International Humanitarian Law (IHL).[60] While IHL focuses on minimising collateral damage, the precautionary principle prioritises environmental protection, offering more detailed guidelines for assessing threats.[61]

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[56] "Stockholm Declaration: UN Conference on the Human Environment 1972", *ClearIAS,* 1 December 2022, available at: https://www.clearias.com/stockholm-declaration/.

[57] Petra Gümplová, "Sovereignty over Natural Resources – A Normative Reinterpretation", *Global Constitution,* Vol. 9, No. 1, March 2020.

[58] Carl F Cranor, "Some Legal Implications of the Precautionary Principle: Improving Information-Generation and Legal Protections", *International Journal of Occupational Medicine and Environmental Health,* Vol. 17, 2004.

[59] Dayna Scott, "Shifting the Burden of Proof: The Precautionary Principle and Its Potential for the Democratization of Risk", 2005, available at: https://www.academia.edu/1043244/Shifting_the_Burden_of_Proof_The_Precautionary_Principle_and_Its_Potential_for_the_Democratization_of_Risk.

[60] Raphaël van Steenberghe, "International Environmental Law as a Means for Enhancing the Protection of the Environment in Warfare: A Critical Assessment of Scholarly Theoretical Frameworks", *International Review of the Red Cross,* 2023, Vol. 105.

[61] Kirsten Stefanik, "The Environment and Armed Conflict: Employing General Principles to Protect the Environment", in Carsten Stahn, Jens Iverson and Jennifer

Furthermore, the polluter-pays principle (PPP), which holds those responsible for environmental damage financially accountable, is difficult to enforce in Afghanistan due to challenges in identifying polluters during the ongoing conflict and weak legal enforcement. However, incorporating PPP into both IEL and IHL frameworks could improve accountability. For example, reparations could be demanded for environmental damage caused by foreign military operations or extractive industries operating irresponsibly during instability.[62]

Henceforth, while IEL provides crucial frameworks for environmental protection in conflict settings like Afghanistan, principles such as the precautionary approach and PPP need clearer integration with IHL to effectively address the complex environmental harms caused by war.

XII. Enforcement of Environmental Law in Armed Conflict: The Case of Afghanistan

The issue of enforcing environmental protection during armed conflict remains deeply problematic, and Afghanistan illustrates these challenges well. There is no foolproof mechanism for ensuring environmental accountability in wartime. Despite post-Gulf War efforts to evaluate whether the law of war sufficiently protects the environment, no Nuremberg-style tribunal or similar legal forum has emerged. For instance, while the United Nations established the International Criminal Tribunal for the Former Yugoslavia (ICTY) in 1993 to try war crimes, no tribunal—including the ICTY or the International Criminal Court (ICC) has prosecuted individuals for environmental harm during war.[63] In Afghanistan, decades of conflict

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Easterday (eds), *Environmental Protection and Transitions from Conflict to Peace: Clarifying Norms, Principles, and Practices*, Oxford University Press, 2017, available at: https://doi.org/10.1093/oso/9780198784630.003.0005.

[62] *Ibid.*

[63] Thomas Smith, "The New Law of War: Legitimizing Hi-Tech and Infrastructural Violence", *International Studies Quarterly,* Vol. 46, 2002.

have led to extensive deforestation, groundwater contamination, and destruction of farmland, yet no formal enforcement actions have been taken against responsible actors.[64]

When NATO operations intensified in Afghanistan, environmental degradation, such as pollution from military bases, use of toxic materials, and infrastructure damage, went largely unaddressed legally. No international court has taken up these harms, reflecting the broader issue: violations of international environmental norms in conflict zones often go unpunished. Similar to Yugoslavia's unsuccessful appeal to the International Court of Justice during the Kosovo War, Afghanistan has not seen any significant international legal responses to its environmental damages.[65] While UNEP did assess environmental conditions in post-conflict Kosovo, Afghanistan's environmental crises have not received the same institutional attention, and no equivalent task force has been established.[66]

1. Enforcement Challenges

In Afghanistan, the environmental consequences of war have been substantial oil spills, toxic waste dumping, and ecosystem destruction, but enforcement remains weak. What punishment awaits a state or actor that violates environmental law during conflict? In reality, consequences are rare. For example, the bombing campaigns across Afghanistan's countryside led to scorched earth and habitat loss, yet the responsible parties faced no environmental accountability. This reflects a broader disillusionment with the enforcement of environmental norms during wartime. Institutions like the ICC rarely prioritise environmental crimes, focusing more on

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[64] Lindsay Moir, "The Implementation and Enforcement of the Laws of Non-International Armed Conflict", *Journal of Armed Conflict,* Vol. 3, 1998.
[65] T. Smith, above note 65.
[66] "UNEP-Led Balkans Task Force Mission Leaves Yugoslavia", *ReliefWeb,* 27 July 1999, available at: https://reliefweb.int/report/serbia/unep-led-balkans-task-force-mission-leaves-yugoslavia.

genocide and crimes against humanity, which sidelines ecological issues despite their long-term implications.[67]

Furthermore, Afghanistan shows how reluctant the international community can be in establishing concrete wartime environmental standards. Despite widespread environmental damage caused by both foreign military actions and internal conflict, few binding rules have been developed or enforced. This lack of clarity and enforcement undermines environmental protection and perpetuates impunity.

Given these enforcement gaps, some experts propose a different solution: embedding environmental ethics into military training and operations.[68] In Afghanistan, where prolonged war has weakened governance and legal institutions, the military often remains the only functioning structure in conflict zones. Therefore, indoctrinating armed forces with environmental responsibility could be a practical alternative. By incorporating environmental standards into military doctrine, training, and operations, states can encourage respect for nature even during war.

Afghanistan's military has taken modest steps in this direction. Environmental training modules have been introduced for officers, emphasizing the importance of minimizing harm to natural resources and civilian infrastructure. This mirrors soft-law approaches seen in countries like the United States and India, where military manuals include sections on avoiding unnecessary environmental damage. For example, the U.S. Navy's Commander's Handbook on the Law of Naval Operations outlines the importance of minimizing collateral

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[67] "Enforcement of International Law", in Afshin Akhtarkhavari et al. (eds), *International Law: Cases and Materials with Australian Perspectives*, Cambridge University Press, 2010) available at: https://www.cambridge.org/core/books/international-law/enforcement-of-international-law/D0F50A39CA6C54741414233E5F9D1B0B.

[68] Rymn J Parsons, "The Fight to Save the Planet: U.S. Armed Forces, 'Greenkeeping', and Enforcement of the Law Pertaining to Environmental Protection During Armed Conflict", *Georgetown International Environmental Law Review,* Vol. 10, 1997, available at: https://www.academia.edu/40451495/Rymn_James_Parsons.

environmental damage where feasible. Although Afghanistan lacks a formalized doctrine of this kind, its military structure has begun integrating environmental awareness programs for field commanders.

In post-conflict Afghanistan, where civil institutions are rebuilding, the military may serve as the first line of response to environmental crises resulting from combat. Armed forces trained in environmental protection can help fill the legal and administrative void that exists during and immediately after the conflict. Operational plans, rules of engagement, and internal directives could all serve as vehicles for transmitting environmental guidelines to troops in real time, promoting a culture of restraint and respect for nature.[69]

XIII. International Law's Failure in Afghanistan's Environmental Devastation

The lack of accountability for war-related crimes and ongoing environmental devastation without fear of punishment underscores the ineffectiveness of international law as a deterrent.[70] This failure is exemplified not only by historical cases like the Nuremberg trials but also by contemporary examples from Afghanistan.[71] For instance, the extensive environmental damage caused by decades of conflict in Afghanistan, ranging from deforestation and soil degradation to the contamination of water sources due to military operations, has gone largely unaddressed by international legal mechanisms. Several factors contribute to international law's inability to prosecute

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[69] "Opinio Juris (International Law)", *Legal Information Institute*, available at: https://www.law.cornell.edu/wex/opinio_juris_(international_law).

[70] André Nollkaemper, "'Failures to Protect' in International Law'", in Marc Weller (ed.), *The Oxford Handbook of the Use of Force in International Law*, Oxford University Press, 2015 available at: https://doi.org/10.1093/law/9780199673049.003.0021

[71] Dino Kritsiotis, "International Law and the Relativities of Enforcement", in James Crawford & Martti Koskenniemi (eds), *The Cambridge Companion to International Law,* Vol. 245, 2012, available at:https://www.cambridge.org/core/books/cambridge-companion-to-international-law/international-law-and-the-relativities-of-enforcement/8163FD38F7B51F61E7BA418F3368156B.

environmental war crimes effectively. Firstly, environmental protection laws suffer from a pervasive lack of clarity and uniformity. Specifically, there is minimal global consensus on the implementation of international agreements. Terms such as "widespread," "long-term," and "severe" damage to the environment, endorsed by the Rome Statute, ENMOD, and Additional Protocol, are often too broad or poorly defined, making their application inconsistent. For example, the destruction of agricultural lands and water systems in Afghanistan during the U.S.-led military campaigns could arguably meet these criteria, but the lack of precise definitions has hindered legal action.

Moreover, the Rome Statute,[72] ENMOD,[73] and Additional Protocol implicitly permit a certain degree of ecological impact by setting permissible thresholds for environmental damage.[74] This has allowed military operations in Afghanistan, such as the use of depleted uranium munitions and the destruction of natural habitats, to remain insufficiently regulated. Neither incidental war-related environmental damage nor deliberate harm is explicitly prohibited, provided such actions do not contravene established norms. The absence of precise criteria, particularly in assessing the proportionality of military necessity against environmental detriment, further complicates enforcement. Additionally, the fact

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[72] "Rome Statute of the International Criminal Court", in William Schabas (ed.), *An Introduction to the International Criminal Court,* Vol. 167, 2001, available at: https://www.cambridge.org/core/books/an-introduction-to-the-international-criminal-court/rome-statute-of-the-international-criminal-court/9070B0B3D6664F75373C4A6DA0E2F09C.

[73] Emily Crawford, "Accounting for the ENMOD Convention: Cold War Influences on the Origins and Development of the 1976 Convention on Environmental Modification Techniques", in Gerry Simpson, Matthew Craven & Sundhya Pahuja (eds), *International Law and the Cold War*, Vol. 81, 2019, available at: https://www.cambridge.org/core/books/international-law-and-the-cold-war/accounting-for-the-enmod-convention-cold-war-influences-on-the-origins-and-development-of-the-1976-convention-on-environmental-modification-techniques/E9266F7050E2336D690605F40A50A0FD.

[74] Knut Dörmann, "Elements of War Crimes Under the Rome Statute of the International Criminal Court: Sources and Commentary", 2003, available at: https://www.cambridge.org/core/books/elements-of-war-crimes-under-the-rome-statute-of-the-international-criminal-court/133E9566AE9A646D91A38827C998E60E.

that these international agreements only apply to countries that have ratified them presents another issue. For example, Afghanistan's fragile ecosystems have suffered due to military operations conducted by foreign powers, yet international agreements often lack the legal force to hold these actors accountable.

The ICC, established under the Rome Statute, has also proven ineffective in deterring environmental transgressions. This is partly due to its mandate, which prioritizes crimes against humanity, war crimes, and genocide, leaving environmental offences inadequately addressed. For instance, while the Taliban's destruction of ancient Buddha statues in Bamiyan drew global condemnation, the environmental damage caused by their mining operations and illegal logging in the region has received little attention. Judges at the ICC typically lack expertise in environmental law, making it less likely for environmental harm to be prosecuted effectively. Furthermore, the ICC's jurisdiction is limited to natural individuals, preventing states or militaries from being held accountable for environmental damage. For example, the U.S. military's use of burn pits in Afghanistan, which released toxic chemicals into the environment, has not been subject to ICC scrutiny. Lastly, the ICC's penalties are limited to fines and incarceration, excluding restitution or civil liability, which could help repair environmental damage. State sovereignty issues further complicate efforts to prosecute environmental war crimes, as states may be reluctant to cede jurisdiction to international bodies. However, the ICC's indictment of Sudanese President Omar al-Bashir, which included charges related to the destruction of property and looting of natural resources in Darfur, sets a precedent for considering environmental impacts within broader war crimes prosecutions.[75] Applying this precedent to cases like Afghanistan could help address the environmental devastation caused by prolonged conflict and hold perpetrators accountable.

[75] "Al Bashir Case: The Prosecutor v. Omar Hassan Ahmand Al Bashir", International Criminal Court, available at: https://www.icc-cpi.int/darfur/albashir.

XIV. Strategies for Mitigating Environmental Damage in Warfare: Insights from Afghanistan

1. Enhance the Enforcement Mechanism

International law requires significant revisions to better address environmental damage in conflicts, particularly in regions like Afghanistan, where decades of war have caused severe ecological harm. The Additional Protocol I and the ENMOD Convention should be revised or replaced with a new treaty to improve their effectiveness.[76] Legal terms like "widespread", "long-term", and "severe" need clear, consistent definitions to ensure accountability. For example, the destruction of Afghanistan's forests for military purposes and the contamination of water sources by military waste could be classified as "widespread" and "long-term" damage under clearer legal frameworks. Reforms must prioritise environmental protection, covering both deliberate and incidental harm. Specifically, Article 35(3) of Protocol I should be revised to lower the culpability threshold for environmental damage, allowing liability based on any one of the criteria, widespread, long-term, or severe, instead of requiring all three.[77] Additionally, incorporating explicit provisions for environmental protection and the Polluter-Pays Principle (PPP) within International Humanitarian Law (IHL) can provide a clearer legal basis for enforcement. Strengthening agreements like the Environmental Modification Convention (ENMOD) to include specific clauses on the PPP during armed conflicts would also enhance accountability.

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[76] Joanna Jarose, "A Sleeping Giant? The ENMOD Convention as a Limit on Intentional Environmental Harm in Armed Conflict and Beyond", *American Journal of International Law,* Vol. 118, 2024.

[77] Matthew Gillett, "Environmental Damage and International Criminal Law", in Marie-Claire Cordonier Segger & Sébastien Jodoin (eds), *Sustainable Development, International Criminal Justice, and Treaty Implementation,* Vol. 73, 2013, available at: https://www.cambridge.org/core/books/sustainable-development-international-criminal-justice-and-treaty-implementation/environmental-damage-and-international-criminal-law/9B60F77D6F7DB4463741DC87C5A10D7F.

2. Eliminate Dangerous Military Weapons

Eliminating weapons that cause severe environmental damage, such as nuclear, chemical, and biological weapons, is crucial for reducing ecological harm. In Afghanistan, the use of depleted uranium munitions and other hazardous materials has left lasting environmental scars, including soil and water contamination. Despite many states' commitments to banning such arms, their continued existence poses proliferation risks. Prohibiting these weapons would be complex and costly, but the cost of restoring environmental damage afterwards would be even higher. Increasing military vigilance and intelligence-gathering can help prevent ecological harm by better identifying and addressing threats. For instance, monitoring the use of explosives in Afghanistan's mountainous regions could mitigate landslides and soil erosion caused by military operations.

3. Promote Environmental Awareness and Justice

Open communication between the public and government is essential to protect the environment effectively. In Afghanistan, public concern over the destruction of agricultural lands and water systems could prompt the government to consider environmental issues before military actions. Disclosing government-caused environmental damage, such as the impact of burn pits used by foreign militaries, can increase public awareness and pressure for accountability. Establishing a global network for disseminating environmental impact information, similar to the Emergency Planning and Community Right to Know Act of 1986 of the USA,[78] is crucial. Additionally, affected individuals in Afghanistan should have access to environmental justice and compensation for harm caused by military activities. This approach would encourage states to

[78] "Emergency Planning and Community Right-to-Know Act EPCRA", *GT Environmental,* available at: https://gtenvironmental.com/service/emergency-planning-community-right-to-know/.

consider environmental consequences more carefully during conflicts.

4. Establish Environmental Damage Funds and Insurance Schemes

Entities responsible for wartime environmental damage should be required to fund cleanup and restoration efforts. For example, the destruction of Afghanistan's natural resources, such as forests and water systems, by military operations necessitates significant remediation. Developing insurance schemes that require parties involved in conflicts to cover potential environmental damages could also ensure accountability. Given the challenges in assigning state culpability, an international fund is necessary to ensure adequate remediation. This fund could be financed by taxing nations that export weaponry, such as the U.S., Russia, and others. Such a fund would support environmental restoration in cases where a state avoids accountability or cannot cover costs, as seen in Afghanistan's ongoing ecological crisis.

5. Integrate Environmental Considerations into Military Systems

To effectively address ecological issues in military operations, the Afghan Army should hold annual meetings in Kabul with the Environmental Commission, Forestry Department, and NGOs. These meetings would support the development of strong environmental plans and incorporate external expert recommendations. For instance, collaboration with NGOs could help address the deforestation caused by military activities and promote reforestation efforts. Establishing ongoing relationships with relevant agencies and NGOs would integrate environmental considerations into military planning, enhancing both protection efforts and operational effectiveness. This approach would ensure that Afghanistan's fragile ecosystems are safeguarded during and after conflicts.

Conclusion

The environmental devastation caused by decades of conflict in Afghanistan underscores the urgent need for stronger international legal frameworks and proactive measures to address war-related ecological harm. From landmines rendering vast tracts of land unusable to air pollution, deforestation, and the destruction of agricultural systems, the environmental consequences of war have been profound and far-reaching. These impacts not only threaten Afghanistan's ecosystems but also exacerbate human suffering, food insecurity, and economic instability.

Furthermore, international law, as it stands, has failed to hold perpetrators accountable for environmental crimes during armed conflict. The lack of clear definitions, enforceable mechanisms, and jurisdictional limitations has allowed environmental damage to persist without consequences. The case of Afghanistan highlights the need for reforms, including clearer legal standards, the integration of environmental protection into military practices, and the establishment of international funds for environmental restoration. Moving forward, it is imperative to priorities environmental justice in conflict zones. This includes strengthening peacekeeping efforts to monitor and report environmental harm, revising military handbooks to incorporate eco-friendly practices, and promoting public awareness to hold governments and militaries accountable. Additionally, international cooperation is essential to support demining efforts, reforestation, and the restoration of Afghanistan's natural habitats. The lessons from Afghanistan serve as a stark reminder that the environment is a silent victim of war, and its protection must be a central consideration in both conflict and post-conflict recovery. By addressing these challenges through legal, institutional, and community-driven approaches, the international community can work towards a future where the ecological costs of war are minimized, and sustainable recovery becomes a reality for conflict-affected regions like Afghanistan.