MARINE ENVIRONMENTAL DAMAGE DURING WARS: COMPENSATION MECHANISMS AND UKRAINE'S PERSPECTIVE

Diana Liashenko
Associate, Black Sea Law Company
Member, Ukrainian Maritime Bar Association
LL.M., National University
"Odesa Law Academy", Ukraine
liashenko.di@gmail.com

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I. INTRODUCTION

Marine ecosystems are vital for global biodiversity, economic stability, and climate regulation, yet they are especially vulnerable during times of war. Activities such as naval combat, oil spills, bombings of ports, and the dumping of hazardous materials can cause significant harm. As the long-term ecological and socio-economic impacts of such destruction become increasingly evident, the importance of protecting these environments during war has gained more attention in international legal and policy discussions.

The environmental damage caused by war can have far-reaching, lasting effects. In Ukraine, the ongoing war has already inflicted substantial harm on the marine environment, particularly in the Black Sea. Naval blockades, attacks on oil platforms, and shipwrecks have all contributed to the deterioration of the ecosystem. However, despite the severe consequences, there has been little exploration of how such environmental damages can be compensated under international law.

This situation in Ukraine highlights a critical need to address compensation mechanisms for marine environmental harm caused by warfare, especially in the Black and Azov Seas. Military actions have led to widespread pollution, habitat destruction, and risks to protected areas and biodiversity. Exploring compensation strategies is essential for creating sustainable solutions that balance military objectives with the urgent need to protect marine environments.

This essay will delve into the current mechanisms for compensating environmental damage caused by war, comparing them to the ongoing situation in Ukraine. By examining past cases and lessons learned from international law, the essay aims to identify the most effective ways for Ukraine to seek compensation for the environmental harm inflicted on its marine ecosystems.

Through a detailed legal analysis and case studies, this essay will contribute to a deeper understanding of how marine ecosystems can be better protected through more robust, enforceable, and cooperative international mechanisms.

II. HISTORICAL CONTEXT OF MARINE ENVIRONMENTAL DAMAGE DURING WARS

The impact of wars on marine ecosystems is far-reaching, as seen in Ukraine, where the ongoing war has caused significant damage to the Black and Azov Seas. Events such as the destruction of the Kakhovka Hydropower Plant have resulted in severe water pollution, with harmful oil and chemicals contaminating the water, endangering both local communities and marine life[1]. Moreover, military activities disrupt local fisheries, worsening the already pressing issues of overfishing and food insecurity in the region. This is further complicated by changes in the ocean's chemistry due to wartime conditions. The devastating effects of war on the environment highlight the urgent need for international cooperation to address these challenges, protect marine ecosystems, and restore their ecological balance for future generations[2].

1. MARINE POLLUTION DURING WORLD WAR II

World War II (WWII) caused severe environmental damage across various ecosystems, including marine environments. During the war, strategic military goals largely overshadowed concerns about the environment, but the cumulative effects of naval combat, shipwrecks, and oil spills have had lasting consequences on ocean health.

The sinking of thousands of vessels, including oil tankers and warships, resulted in massive releases of petroleum and other hazardous substances into the world's oceans. Many of these shipwrecks, which still rest on the ocean floor, continue to pose environmental threats today due to corroding hulls and leaking fuel. For example, the USS *Mississinewa*, a U.S. Navy oiler sunk in 1944 in the Ulithi Atoll, continues to release oil more than seven decades after the war's end[3].

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[1] Maritime Security Forum**,** "Implications of War on the Marine Environment" https://www.forumulsecuritatiimaritime.ro/implications-of-war-on-the-marine-environment/#:~:text=Wars%20can%20also%20lead%20to,maintain%20their%20shells%20and%20skeletons accessed 28 March 2025.

[2] Cui, Yuanzheng, Jiang, Qutu, Liu, Jianguo, Xu, et al., "Complex Impacts of Wars on Global Sustainable Development in a Metacoupled World" *Purdue University (bepress)*, https://core.ac.uk/download/591834109.pdf accessed 28 March 2025.

[3] U.S. Navy Supervisor of Salvage and Diving, *USS Mississinewa (AO 59) Oil Removal Operations, Ulithi Atoll, 28 January – 1 March 2003* (Naval Sea Systems Command, 2003) https://www.navsea.navy.mil/Portals/103/Documents/SUPSALV/SalvageReports/Mississinewa%20Oil%20Removal%20Operations.pdf accessed 28 March 2025.

Chemical warfare was another factor contributing to marine pollution. Near the end of the war, Allied forces disposed of captured Nazi chemical weapons by dumping them into the Baltic and North Seas. It is estimated that over 300,000 tonnes of chemical munitions were disposed of in this manner, including mustard gas and other nerve agents. These substances remain a serious environmental and public health risk, particularly to fishing communities in affected regions[4].

Additionally, bombing campaigns targeted coastal infrastructure, such as ports and naval bases, which led to the destruction of fuel storage facilities, releasing toxins into adjacent waters.

At the time, there were no international legal standards requiring belligerents to account for environmental damage during war. The 1907 Hague Conventions, which addressed the conduct of hostilities, contained limited and outdated references to the protection of natural resources.[5] In the post-WWII period, there were no effective legal mechanisms for collecting compensation for environmental damage, including marine pollution caused by war. Damage to marine ecosystems remained uncompensated for due to the lack of international standards and mechanisms at the time.

Only in retrospect did scholars and environmentalists begin to assess the scale of the wartime marine degradation caused by WWII. Modern initiatives projects, aim to locate and safely remove these submerged hazards.

Thus, World War II represents a foundational case in understanding how large-scale maritime warfare can leave long-term environmental legacies that require both legal and technical responses decades after active hostilities have ceased.

2. ENVIRONMENTAL CONSEQUENCES OF THE GULF WAR

The Gulf War of 1990 – 1991 marked a major shift in how the world views the environmental consequences of armed conflict, especially for marine ecosystems. As Iraqi forces withdrew from Kuwait, they deliberately released between 8 and 11 million barrels of crude oil into the Persian Gulf. This became one of the largest oil spills in history and had devastating

[4] HELCOM CHEMU, *Report on Chemical Munitions Dumped in the Baltic Sea*, Report to the 16th Meeting of Helsinki Commission, 8-11 March 1994, January 1994, Danish Environmental Protection Agency.
[5] Hague Convention IV (The Laws and Customs of War on Land) (1907), Art 23(g).

effects: shorelines were drenched in oil, thousands of seabirds perished, and fragile ecosystems such as mangroves, coral reefs, and sea turtle nesting grounds were severely damaged.

The spill spread over roughly 6,000 square kilometers, choking marine life by disrupting oxygen flow in the water and collapsing entire food chains. While some areas have slowly started to recover, full restoration remains out of reach even decades later.[6] The situation was worsened by bombings that targeted oil refineries and storage sites, leading to further contamination of the sea through both airborne pollutants and direct runoff.

These deliberate attacks on oil infrastructure, while militarily strategic, raised pressing legal questions – especially regarding violations of international humanitarian and environmental law. The war ultimately became a wake-up call for the global legal community. It underscored the need to treat the environment as more than just a secondary casualty of war.

In response, the United Nations created the Compensation Commission (UNCC) under Security Council Resolution 687. Its mandate was to evaluate claims and award damages caused by Iraq's invasion of Kuwait.[7] According to the third "F4" instalment report by the United Nations Compensation Commission (UNCC), a total of USD 1.148 billion was recommended for environmental damage claims submitted by Kuwait and Saudi Arabia. Of this amount, approximately USD 685 million was awarded to Kuwait and USD 463 million to Saudi Arabia specifically for environmental remediation, including marine and coastal recovery.[8] The compensation was financed by Iraq's oil export revenues, which were controlled under the UN mechanism.[9]

This case established an important legal precedent: states could be held liable for environmental damage caused during war. It showed that compensation for ecological harm could be integrated into international legal frameworks – and that post-war justice must include the

[6] Frederick M Lorenz and Edward J Erickson, *The Euphrates Triangle: Security Implications of the Southeastern Anatolia Project* (National Defense University 1999) 86.
[7] UN Security Council Resolution 687 (3 April 1991) UN Doc S/RES/687
[8] United Nations Compensation Commission, 'Report and Recommendations Made by the Panel of Commissioners Concerning the Third Instalment of "F4" Claims' (10 March 2005) UN Doc S/AC.26/2005/10, para 106
[9] United Nations Security Council, 'Iraq: UNCC Final Payment of Compensation to Kuwait' (27 January 2022) UN Doc SC/14778

environment. It also prompted revisions to military doctrines, encouraging armed forces to account for environmental consequences in operational planning.

Ultimately, the Gulf War's environmental fallout highlighted just how fragile marine ecosystems are in times of conflict – and how vital it is to hold perpetrators accountable. It laid a foundation that continues to influence how we think about environmental protection during war today.

3. IMPACT OF THE BALKAN WARS ON MARINE ECOSYSTEMS

Although the Balkan Wars of the 1990s were primarily land-based conflicts, their indirect but significant impact on marine environments – particularly in the Adriatic and Aegean Seas – has become increasingly clear. Countries like Croatia, Bosnia and Herzegovina, and later Kosovo were sites of heavy fighting near major river systems such as the Neretva and Drina, which eventually drain into the Adriatic Sea. These waterways acted as conduits for pollution, linking inland battlefields to coastal marine zones.

One of the most serious environmental threats emerged from the deliberate bombing of industrial sites, refineries, and water treatment facilities. These actions released large quantities of hazardous substances – including heavy metals, hydrocarbons, and PCBs (polychlorinated biphenyls) – into the rivers.[10] The contamination flowed downstream and into marine ecosystems, leading to eutrophication, loss of biodiversity, and the collapse of local fisheries.

Furthermore, naval operations by NATO in the Adriatic Sea, especially during the Kosovo War, involved military exercises, ship deployments, and munitions testing that introduced pollutants, such as unexploded ordnance, sonar disruption, and fuel leakage into the marine environment.[11] The presence of warships in ecologically sensitive areas, such as the Bay of Kotor and coastal Albania, potentially disrupted migratory patterns of marine mammals and fish.

Another point of concern was the disposal of munitions and military waste into the sea. Reports suggest that both sides, particularly in the earlier conflicts in Croatia and Bosnia, discarded

[10] United Nations Environment Programme, *The Kosovo Conflict: Consequences for the Environment and Human Settlements* (UNEP/UNCHS 1999) 22–28.
[11] NATO, 'Environmental Aspects of Military Activities: NATO Policy and Activities' (NATO Committee on the Challenges of Modern Society 2001).

equipment and ammunition into nearby waters to avoid capture.[12] This poses long-term ecological risks due to the corrosion of chemical containers and the leaching of toxic materials.

The post-war environmental recovery in the region has been slow, partly due to limited resources and fragmented political will among successor states. The United Nations Environment Programme (UNEP) conducted post-conflict environmental assessments in Kosovo and other affected regions, emphasizing the need for cross-border cooperation in marine and riverine ecosystem rehabilitation.[13]

The Balkan conflicts, therefore, highlight how even conflicts focused inland can have deleterious consequences for marine environments via interconnected water systems. They underscore the need for integrated watershed-to-sea monitoring and response strategies in conflict zones.

But despite the scale and documentation of this environmental damage, no formal compensation mechanism was ever established. Unlike the Gulf War, which saw the creation of the United Nations Compensation Commission (UNCC), the Kosovo conflict lacked any comparable process to assess harm or assign responsibility. No country paid damages, and no international tribunal stepped in to ensure ecological restoration. The only official response came from the United Nations Environment Programme (UNEP), which published a thorough post-conflict environmental assessment.[14]

This situation highlights a major weakness in international law: even when environmental destruction is clear and well-documented, there is no guarantee of justice or recovery without the political will or legal infrastructure to act.

[12] Goran Svilanović, Regional Environmental Reconstruction Programme for South Eastern Europe (REReP, Stability Pact for SEE 2003) 41–45.
[13] UNEP, 'Desk Study on the Environment in Kosovo' (UNEP 1999).
[14] United Nations Environment Programme, *The Kosovo Conflict: Consequences for the Environment and Human Settlements* (UNEP/UNCHS 1999)

III. EXISTING MECHANISMS FOR COMPENSATION FOR MARINE ENVIRONMENTAL DAMAGE. WARTIME VS PEACETIME.

The way we deal with environmental damage – particularly in marine ecosystems – varies dramatically depending on whether we are in a time of peace or war. While peacetime offers relatively clear legal tools for holding polluters accountable, wartime presents a far murkier legal and ethical landscape.

During peace, environmental protection and compensation are governed by a structured set of international legal instruments.

One of the cornerstones of international marine law is the United Nations Convention on the Law of the Sea (UNCLOS). Under Articles 192 and 194[15], states are obligated to protect and preserve the marine environment and to take all necessary measures to prevent pollution. While comprehensive in its design, UNCLOS is primarily oriented toward peacetime activities and lacks enforcement mechanisms in war zones.

Similarly, customary international law, as codified in the International Law Commission's Draft Articles on the Responsibility of States for Internationally Wrongful Acts[16], affirms the obligation of states to make full reparation for internationally wrongful acts, including environmental damage. Yet, in the context of war, these provisions are rarely invoked—partly due to the difficulty of evidence collection and the reluctance of states to pursue such claims amid ongoing hostilities.

Environmental protections are also embedded in the Rome Statute of the International Criminal Court (ICC). Article 8(2)(b)(iv)[17] criminalizes intentional military actions that cause "widespread, long-term, and severe damage to the natural environment." Nevertheless, the high legal threshold required to establish such a crime has led to limited use of this provision in practice.

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[15] United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3, arts 192 and 194.
[16] International Law Commission, 'Draft Articles on Responsibility of States for Internationally Wrongful Acts' (2001) UN GAOR 56th Session Supp No 10, UN Doc A/56/10, arts 31-36
[17] Rome Statute of the International Criminal Court (adopted 17 July 1998, entered into force 1 July 2002) 2187 UNTS 90, art 8(2)(b)(iv)

Regional conventions add another layer of protection – such as the Barcelona Convention[18] in the Mediterranean and the Helsinki Convention[19] in the Baltic Sea – but these, too, were developed for peacetime environmental governance and do not sufficiently address the unique dynamics of warfare.

In recent years, however, the legal landscape has begun to shift. One of the most promising developments is the adoption of the 2022 Draft Principles on the Protection of the Environment in Relation to Armed Conflicts by the International Law Commission (ILC)[20].

These principles offer a forward-looking framework for environmental protection before, during, and after armed conflict. While not yet legally binding, they reflect a growing global consensus on the need for stronger environmental safeguards in warfare. The ILC emphasizes obligations such as damage assessment, environmental remediation, and long-term monitoring – elements that are crucial for holding states accountable and ensuring ecological recovery.

This evolution in international law marks a significant step toward bridging the gap between peacetime environmental norms and the realities of war.

In wartime, the situation is far more complicated. There are fewer legal mechanisms, weaker enforcement, and substantial difficulties in attributing blame. The Geneva Conventions and their Additional Protocols mention environmental protection only in broad terms – and often without any real enforcement power.

Another relevant instrument, the ENMOD Convention (1976)[21], prohibits the use of environmental modification as a method of warfare. While it helps prevent practices like weather

[18] Convention for the Protection of the Mediterranean Sea Against Pollution (adopted 16 February 1976, entered into force 12 February 1978) 1102 UNTS 27 (Barcelona Convention)
[19] Convention on the Protection of the Marine Environment of the Baltic Sea Area (adopted 9 April 1992, entered into force 17 January 2000) (1992) 1507 UNTS 167 (Helsinki Convention)
[20] International Law Commission, "Draft Principles on the Protection of the Environment in Relation to Armed Conflicts" (2022) UN Doc A/77/10
[21] Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (adopted 10 December 1976, entered into force 5 October 1978) 1108 UNTS 151 (ENMOD Convention)

manipulation or ecosystem destruction as a tactic, it provides no mechanisms for reparation, restitution, or restoration if damage does occur.

One of the biggest differences between wartime and peacetime compensation systems lies in proving intent. During peace, liability usually arises from negligence or illegal discharge. During war, it's much harder to prove that environmental damage was intentional or reckless, especially when it's collateral or caused by non-state actors. As a result, accountability often falls through the cracks.

Wartime also lacks effective monitoring. In peace, environmental agencies, civil society, and international monitors can document damage accurately. In war zones, however, basic access and data collection are often impossible due to security risks or lack of infrastructure.

These stark differences highlight the urgent need for a harmonized international legal framework – one that works both in peacetime and wartime. Environmental degradation doesn't pause for conflict, and marine ecosystems damaged during war are no less worthy of protection. What we need is a global system that ensures consistent accountability, enables recovery efforts, and helps countries, like Ukraine, pursue meaningful reparations when nature becomes a victim of war.

IV. Financial Instruments and Funds for Environmental Restoration

Restoring marine ecosystems after a war is not just about fixing what's been broken – It's about healing environments that are often forgotten once the fighting stops. While legal frameworks and international concern are essential, real recovery requires funding – dedicated, accessible, and designed for war settings.

One of the few real-world examples we have is the United Nations Compensation Commission (UNCC)[22], set up after the Gulf War. It stands out because it didn't just acknowledge environmental harm – It paid for it. Iraq was held accountable for widespread ecological damage,

[22] United Nations Compensation Commission, *Report and Recommendations Made by the Panel of Commissioners Concerning the Third Instalment of "F4" Claims* (10 March 2005) UN Doc S/AC.26/2005/10

including marine oil pollution, and over $5 billion was awarded to support restoration. But that success remains the exception, not the rule. No similar fund has been created for conflicts since, leaving a massive gap when it comes to supporting countries like Ukraine today.

In peacetime, things work differently. If an oil tanker spills its cargo, there's a process. The International Oil Pollution Compensation (IOPC)[23] Funds ensure that victims such as people, governments or ecosystems receive compensation. But the IOPC system is built for accidents, not warfare. It does not apply when ships are bombed, ports are shelled or pipelines are sabotaged in war zones.

Other organizations like the Global Environment Facility (GEF)[24] do provide grants for environmental projects and have even supported post-war recovery in places like Iraq and Lebanon. But the GEF is not a legal mechanism for compensation. Its work depends on donor support and priorities, not obligations from responsible parties.

Some regional initiatives, like the Mediterranean Trust Fund[25] and the Baltic Sea Fund[26], fund marine conservation and monitoring. However, these instruments were designed for peacetime cooperation, not for addressing the aftermath of armed conflict. So far, they've never been used to respond to wartime environmental disasters.

In a few post-war settings, temporary trust funds have been created by the UN or development banks to clean up and rebuild. However, these are usually short-term programmes focused on infrastructure or humanitarian assistance and rarely address environmental concerns, particularly those related to the marine environment.

The truth is simple: there is no global fund dedicated to helping countries recover marine environments damaged by war. And without such a mechanism, restoration depends on goodwill, scattered donor efforts, and fragmented support. That's not enough.

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[23] International Maritime Organization, *International Oil Pollution Compensation Funds* (IMO, 2022) https://www.iopcfunds.org accessed 12 March 2024

[24] Global Environment Facility, *Restoring the Ocean's Health: GEF Investments in Marine Ecosystems* (2022) https://www.thegef.org/newsroom/publications/restoring-oceans-health-gef-investments-marine-ecosystems

[25] Mediterranean Action Plan, *Barcelona Convention and Trust Fund Documents* (UNEP/MAP) https://www.unep.org/unepmap/who-we-are/partners/mediterranean-trust-fund accessed 10 March 2024

[26] Baltic Marine Environment Protection Commission (HELCOM), Funding Instruments for the Baltic Sea https://helcom.fi/ accessed 10 March 2024

What's needed is a permanent, international fund – built with war in mind – that can step in when marine ecosystems are damaged by war. It should draw inspiration from successful models like the IOPC or UNCC but go further by including war-specific contexts. It should be fair, fast, and funded by a mix of reparations, international contributions, and perhaps even taxes on activities that risk marine health.

Because protecting the ocean in wartime isn't just about legal obligations. It is about protecting a shared global asset and ensuring that recovery is possible, not only for the environment but also for the people whose livelihoods depend on it.

UKRAINE'S CONTEXT: CHALLENGES AND OPPORTUNITIES

The ongoing war in Ukraine, triggered by russia's full-scale invasion in 2022, has caused not only immense human suffering and destruction of infrastructure but also deep and lasting damage to the natural environment. Among the most vulnerable ecosystems affected by the war are the Black Sea and the Sea of Azov, whose waters have become the silent victims of military aggression.

Naval blockades, the destruction of oil platforms, and the sinking of vessels have resulted in significant marine pollution. In coastal cities like Mariupol, Odesa, and Kherson, the bombing of industrial facilities, ports, and military infrastructure has caused the release of hydrocarbons, heavy metals, and untreated sewage into the sea.[27]

Ukraine now faces the extraordinary challenge of addressing this environmental degradation while the war is still ongoing. The task is not only to record and respond to the damage but to lay the legal and institutional foundations for future restoration and accountability.

1. DOCUMENTED MARINE ENVIRONMENTAL DAMAGE CAUSED BY THE WAR IN UKRAINE

The war in Ukraine has led to alarming and far-reaching environmental damage in the region's marine ecosystems.

[27] Ministry of Environmental Protection and Natural Resources of Ukraine, 'Report on the Environmental Consequences of War' (Kyiv, 2023) 18–20

Naval warfare and deliberate acts of environmental sabotage have resulted in widespread pollution of the Black Sea and the Sea of Azov. In particular, the mining of coastal waters and estuaries, most notably in the Dnieper–Bug Estuary and the Kerch Strait, has severely disrupted both commercial shipping and environmental monitoring.

Sea mines, aside from posing an immediate threat to vessels, have interrupted fish migration routes and damaged critical spawning grounds. There is also evidence linking the deployment of sea mines and related explosive activities to an unusual rise in cetacean strandings, suggesting that the trauma from sonar and explosions is inflicting severe harm on marine mammals such as dolphins and porpoises.

According to Order N78/1 issued by the State Environmental Inspectorate of Ukraine on 15 April 2022, a dedicated Working Group was established at the Operational Headquarters. Its purpose is to develop guidelines and procedures for assessing the damage and calculating the losses inflicted on Ukraine's natural resources and environment as a result of russia's armed aggression. This Working Group includes specialized subgroups that focus specifically on the marine waters.

Furthermore, in most cases where incidents have resulted from russia's aggression on Ukrainian territory, criminal proceedings have been initiated, and pre-trial investigations are actively underway by the Prosecutor's Office.

According to the State Environmental Inspectorate of Ukraine, between 24 February 2022 and 28 March 2025, the total environmental damage caused by russia's armed aggression is estimated at approximately UAH 3.82 trillion. Of this amount, damage to water resources alone accounts for over UAH 96.4 billion. Specifically, pollution of surface water bodies has resulted in UAH 60.2 billion in damages, with 23.5 thousand tonnes of pollutants discharged. In addition, the littering of water bodies has caused UAH 9.4 billion in damages, linked to 38.8 million kilograms of waste material. Furthermore, unauthorized exploitation of water resources, including excessive water abstraction and use, has led to an additional UAH 26.8 billion in damages, covering 20.9 billion cubic meters of unlawfully used water.

The Inspectorate has also identified 54 major polluting facilities contributing significantly to the degradation of Ukraine's aquatic ecosystems. These figures reflect the immense pressure placed on Ukraine's water environment and underscore the urgent need for restoration and long-term environmental governance.[28]

This action by government authorities undoubtedly has a positive impact on recording and documenting marine environmental damage. But are there any legal grounds and mechanisms to recover these funds from russia?

2. NATIONAL LEGAL MECHANISMS AND INSTITUTIONAL CAPACITY

Ukraine possesses a legal framework that provides for environmental protection and liability, including in situations of environmental harm caused by military operations. The Law of Ukraine "On Environmental Protection" (1991) and the Water Code (1995) regulate activities that may affect marine and coastal environments. However, these laws were not originally designed with wartime scenarios in mind.

Institutional capacity to assess, document, and respond to environmental damage is limited due to wartime constraints. The Ministry of Environmental Protection and Natural Resources, while active, has faced logistical challenges in accessing affected territories and maintaining consistent environmental monitoring systems.

The State Environmental Inspectorate has initiated more than 2,000 proceedings related to environmental harm caused by military actions. Nevertheless, without secure access or forensic capacity, attributing specific damage to particular acts of war remains difficult.[29]

National legal mechanisms play a vital role in addressing environmental crimes committed during war. Ukraine's Criminal Code allows for the initiation of criminal proceedings for war-

[28] State Environmental Inspectorate of Ukraine, 'Environmental Damage from Armed Aggression of the Russian Federation (as of 28 March 2025)' (DEI, 31 March 2025) https://www.dei.gov.ua/post/3139 accessed 31 March 2025.
[29] State Environmental Inspectorate of Ukraine, 'War-Related Environmental Damage Reports' (2023).

related environmental destruction, including under Article 438 ("Violation of laws and customs of war") and Article 441 ("Ecocide") of the Criminal Code of Ukraine[30].

These proceedings may include environmental forensic assessments of marine damage (e.g., oil spills, destruction of port infrastructure, sunken ships, or chemical discharges); identification of responsible officials and agencies of the russian federation; issuance of indictments against specific individuals potentially involved in commanding or executing the destruction.

However, a significant limitation is the lack of jurisdiction over foreign state officials, meaning that even if Ukraine successfully investigates and prosecutes in absentia, the actual enforcement of such rulings remains highly constrained in practice.

Ukraine, along with affected individuals and entities, may pursue civil litigation against the russian federation in domestic courts. Traditionally, sovereign immunity protects states from such lawsuits. However, growing international practice supports limiting state immunity in wartime.[31]

However, even with limited doctrines of immunity, the lack of relevant legal substantive provisions makes it challenging to bring russian federation to justice directly in domestic court.

Even when Ukrainian parties obtain favourable court rulings, enforcing those decisions presents significant challenges. The key obstacles include:

a) Identifying russian state assets located in foreign jurisdictions, such as sovereign wealth funds, bank accounts, real estate, or shares in state-owned enterprises.

b) Navigating national laws on enforcement immunity, as many countries prohibit seizure of state property unless expressly authorized by law.

c) Lack of uniform international mechanisms for recognition and enforcement of judgments against states for environmental war damage.

[30] Criminal Code of Ukraine. (2023). *Articles 438, 441*. https://zakon.rada.gov.ua/laws/show/2341-14#Text
[31] Supreme Court of Ukraine, Case No 308/9708/19 (14 April 2022)

In summary, Ukraine's national capacity to address marine environmental damage is evolving but still faces major legal and institutional limitations. Strengthening domestic environmental forensics, legislative reform, and building international coalitions to support asset seizure and litigation enforcement is crucial for future accountability and reparations.

3. APPLICATION OF INTERNATIONAL COMPENSATION PRACTICES IN UKRAINE

Ukraine's prospects for securing compensation for environmental damage, particularly in the marine context, rest heavily on its ability to adapt and apply international legal precedents—notably the United Nations Compensation Commission (UNCC) model. While no dedicated international tribunal currently exists to adjudicate ecological war crimes specific to Ukraine, there is growing momentum within the UN General Assembly and among international legal scholars in favor of establishing a compensation mechanism modeled on the UNCC.

A notable step in this direction was the adoption of UN General Assembly Resolution ES-11/5[32] in November 2022. This resolution calls for the creation of an international register of damage resulting from russia's aggression, explicitly including environmental harm as a category. Although the register itself does not create a legal obligation for reparations, it lays the institutional and evidentiary groundwork for future claims and mechanisms that may lead to accountability.

Ukraine is also strengthening its legal preparedness by cooperating with the International Criminal Court (ICC) and by engaging environmental law experts to compile comprehensive evidence packages, particularly related to pollution, marine habitat destruction, and chemical contamination.

Despite these efforts, the road to compensation is fraught with legal and political hurdles:

a) russia's veto power at the UN Security Council continues to block enforcement measures under Chapter VII of the UN Charter.

b) Most environmental treaties lack explicit provisions for monetary compensation, particularly in wartime scenarios.

[32] UNGA Res ES-11/5 (3 May 2023) UN Doc A/RES/ES-11/5 https://docs.un.org/en/A/RES/ES-11/5 accessed 30 March 2025.

c) The diffuse and cumulative nature of marine damage (e.g., long-term ecological disruption, oil dispersal, fishery collapse) makes valuation and attribution complex.

Nevertheless, Ukraine is actively reforming domestic legislation to strengthen the legal chain of custody for environmental evidence and to enable better cooperation with foreign jurisdictions. These reforms aim to close procedural gaps and enhance interoperability with European and international legal systems.

Moreover, Ukraine's strategic partnerships — particularly with the Council of Europe and the European Union — are creating institutional pathways for technical and legal assistance, as the country seeks to transform documented environmental harm into actionable legal claims.

V. CONCLUSION

In conclusion, russia–Ukraine war demonstrate that damage to marine ecosystems is not merely a temporary side effect of war but carries long-term environmental, economic, and social consequences that demand immediate and sustained attention. Historical precedents reveal that the absence of robust compensation mechanisms leads to prolonged environmental degradation without the possibility of recovering damages from the aggressor country. Conversely, successful initiatives – such as the UN Compensation Commission established after the Gulf War – offer valuable models for future solutions.

The analysis presented in this essay shows that protecting marine environments during war requires:

i. Enhanced Legal Frameworks: There is a critical need to adapt and strengthen both international and national legal instruments to address the specific environmental damages posed by war. This involves revising existing treaties and legal provisions so that they can be effectively applied during and after war. Developing effective mechanisms to enforce of domestic and international decisions.

ii. Establishment of Specialized Compensation Funds: Creating dedicated funds that can be activated during war is essential. Such funds should be capable of providing immediate

financial support for ecological restoration projects, thereby ensuring that affected communities and ecosystems receive the necessary resources to recover.

iii. Strengthened International Cooperation: The challenges faced by Ukraine – where military actions have severely impacted the Black and Azov Seas – highlight the importance of international solidarity. Collaboration with organizations such as the Council of Europe, the European Union, and other global partners is crucial for effective monitoring, evaluation, and remediation of environmental damage.

iv. A Human-Centered, Systemic Approach: Beyond legal and financial measures, a holistic approach is needed that integrates environmental protection into military planning and decision-making. This includes the development of early warning systems and community-based monitoring programs, ensuring that the human cost of environmental damage is not overlooked.

For Ukraine, which is currently enduring severe environmental and humanitarian impacts from the russia–Ukraine war, these measures are especially critical. The international community must come together with empathy and determination to support efforts that meticulously document environmental damage, ensure accountability for those responsible, and restore marine ecosystems.

It is undeniably challenging to set priorities when the scale of losses is enormous. The moral and material damages borne by people must always come first; however, property and commercial losses should never overshadow the environmental damages. Funding must be allocated to restoring the marine environment to a level that sustains human life even amid wartime conditions, as the purity of our seas and waters is an indispensable pillar for the continuation of humanity.