

COMPENSATION FOR MARINE POLLUTION DAMAGE AND THE BALANCE BETWEEN ECONOMIC INTERESTS AND FUNDAMENTAL RIGHTS TO A SAFE ENVIRONMENT

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Abstract. The *subject* of the study is the legal and institutional framework for compensation for damage caused by marine environmental pollution, with special attention to the balance between economic interests and the fundamental right to a safe environment. The paper focuses on the interaction between constitutional guarantees, international maritime law, environmental liability, civil compensation mechanisms, insurance instruments, and human rights standards in ensuring effective protection of the marine environment. *Methodology.* The research is based on a combination of comparative-legal, systemic, environmental-law, human-rights-based, and institutional-economic methods. It integrates constitutional analysis, evaluation of international maritime conventions, assessment of Ukrainian environmental and civil legislation, and examination of European human rights standards. This methodological approach made it possible to identify the interdependence between maritime economic activity, ecological safety, legal accountability, and the enforceability of environmental rights. The *aim* of the work is to define the legal architecture of compensation for marine pollution damage, assess its capacity to protect both economic interests and environmental rights, and develop proposals for strengthening damage assessment, institutional coordination, insurance mechanisms, digital evidence, and ecological restoration. The *results* of the study show that compensation for marine environmental pollution operates as a complex legal and economic instrument combining civil liability, public environmental protection, maritime safety, insurance guarantees, and human rights remedies. International instruments such as UNCLOS, MARPOL, the 1992 Civil Liability Convention, the 2001 Bunker Oil Pollution Damage Convention, and the Convention on the Protection of the Black Sea Against Pollution establish the international and regional framework for prevention, liability, and compensation. Ukrainian legislation provides constitutional, environmental, water, maritime, civil, administrative, and criminal law foundations for compensation, but its effectiveness depends on coherent implementation, reliable damage assessment, proof of causation, and targeted use of recovered funds. The study highlights that the future Ukrainian model should be based on the polluter pays principle, modernization of damage assessment methodologies, recognition of digital environmental evidence, stronger coordination between environmental and maritime authorities, and transparent restoration programs. *Conclusion.* Legal regulation of compensation for marine pollution damage is an environmental, economic, and human rights function of the state. Ukraine's experience demonstrates that protection of the Black Sea and the Sea of Azov requires a model in which maritime economic activity remains legally predictable, while polluters bear the real costs of prevention, cleanup, compensation, and restoration. The effectiveness of such regulation will depend on the ability of Ukrainian law to connect liability, financial guarantees, institutional accountability, and ecological rehabilitation within a framework aligned with European standards of environmental governance and human rights protection.

Keywords: marine environmental pollution, compensation for damage, environmental liability, safe environment, maritime law, economic interests, human rights, polluter pays principle, ecological restoration, Ukraine.

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1. Introduction

The protection of the marine environment is one of the most complex legal challenges of the modern state, since the sea is simultaneously a natural ecosystem, an economic space, a transport corridor, a source of biological resources, and an object of international legal protection. For Ukraine, this issue is especially significant because the Black Sea and the Sea of Azov are directly connected with national security, port infrastructure, international trade, fisheries, coastal development, and post-war recovery. At the same time, marine pollution affects economic interests and the constitutional right of individuals and communities to live in an environment that is safe for life and health (Constitution of Ukraine, 1996).

Compensation for damage caused by marine environmental pollution functions as a legal remedy aimed at restoring the property interests of injured persons and as a public instrument of environmental protection. In environmental law, compensation restores disturbed ecological balance, internalizes the costs of harmful economic activity, prevents the transfer of environmental losses to society, and creates financial incentives for compliance with environmental and maritime safety standards. Therefore, this issue must be examined at the intersection of civil liability, administrative regulation, maritime law, environmental law, international public law, and human rights law.

International maritime law establishes a general obligation of states to protect and preserve the marine environment. The United Nations Convention on the Law of the Sea provides that states must prevent, reduce, and control pollution of the marine environment from any source. Accordingly, compensation for marine pollution damage is an essential element of the international legal order governing the use of the seas (United Nations, 1982).

The International Convention for the Prevention of Pollution from Ships, known as MARPOL 73/78, forms the technical and regulatory core of global ship-source pollution prevention. It transforms the general idea of environmental protection into concrete obligations concerning oil pollution, noxious liquid substances, harmful substances carried by sea, sewage, garbage, and air pollution from ships. When marine pollution occurs, legal systems must ensure the identification of the responsible person, calculation of environmental and economic damage, access to justice, and actual recovery of compensation (International Maritime Organization, 1973/1978).

At the national level, Article 50 of the Constitution of Ukraine guarantees everyone the right to an environment that is safe for life and health, as well as the right to compensation for damage caused by violation of this right. At the same time, Articles 41 and 42 protect property rights and the freedom of

entrepreneurial activity. Thus, Ukrainian constitutional law requires a fair balance between economic activity and the protection of human life, health, property, and environmental security (Constitution of Ukraine, 1996).

This balance is especially important in the maritime sphere, where ports, shipping companies, exporters, fisheries, tourism enterprises, energy operators, and coastal communities depend on the stable functioning of maritime infrastructure. Excessively rigid regulation may create unjustified barriers to economic activity, while excessively weak environmental control may lead to irreversible harm to marine ecosystems and human communities. The central legal question is therefore under what conditions economic activity at sea may be carried out and who must bear the costs when such activity causes environmental harm.

The human-rights dimension of marine pollution is also central to this study. The European Convention on Human Rights protects environmental interests through existing Convention rights, especially Article 8, as developed in the case law of the European Court of Human Rights. Serious environmental pollution may fall within the scope of the right to respect for private and family life and home. This approach demonstrates that environmental damage is an ecological, administrative, and human-rights issue connected with the effective protection of fundamental rights (European Court of Human Rights, 2024).

The relevance of this study is determined by the growing conflict between intensive maritime economic activity and the need to preserve a safe marine environment as a condition for human life, public health, economic stability, and post-war recovery. For Ukraine, this issue has acquired particular importance because environmental damage in the Black Sea and the Sea of Azov directly affects national security, coastal communities, port infrastructure, international trade, and the state's European integration commitments. Therefore, the legal regulation of compensation for marine pollution damage should be considered as a necessary condition for ecological restoration, responsible economic development, and effective protection of fundamental human rights.

2. Legal Framework for Compensation for Marine Environmental Pollution

The legal framework for compensation for damage caused by marine environmental pollution is formed by several interconnected levels of regulation. These include constitutional guarantees, international maritime obligations, national environmental legislation, civil liability rules, administrative enforcement mechanisms, and human rights standards. Such a structure reflects the special nature of marine environmental damage, which affects private interests,

public resources, state security, and the collective interest of society in preserving a safe environment.

The constitutional basis of this framework is formed by the provisions of the Constitution of Ukraine concerning environmental safety, property, entrepreneurship, and compensation for damage. Article 50 guarantees everyone the right to an environment that is safe for life and health and the right to compensation for damage caused by violation of this right. This norm gives environmental compensation a constitutional dimension and makes it a direct legal guarantee rather than a purely sectoral remedy (Constitution of Ukraine, 1996).

The constitutional model also requires consideration of economic freedoms. Article 41 protects the right of property, while Article 42 guarantees the right to entrepreneurial activity. These provisions are essential for the maritime sector, where shipping, port services, fisheries, logistics, tourism, and energy projects form a significant part of economic life. At the same time, constitutional protection of property and entrepreneurship operates together with the duty to respect environmental safety, public health, and the rights of other persons. Therefore, compensation for marine pollution damage becomes a legal mechanism for maintaining a fair balance between economic freedom and environmental responsibility (Constitution of Ukraine, 1996).

At the international level, the United Nations Convention on the Law of the Sea establishes the general duty of states to protect and preserve the marine environment. Part XII of the Convention requires states to prevent, reduce, and control pollution of the marine environment from different sources. This obligation includes the adoption of laws, enforcement measures, cooperation with other states, and development of rules concerning responsibility and liability for environmental damage. For this reason, compensation for marine pollution is connected with the broader international duty of states to ensure that the use of the seas remains compatible with environmental protection (United Nations, 1982).

At the regional level, the protection of the Black Sea is governed by the Convention on the Protection of the Black Sea Against Pollution. This instrument is directly relevant for Ukraine because it establishes cooperation duties for Black Sea coastal states in preventing, reducing, and controlling pollution from land-based sources, vessels, dumping, and emergency situations. Its inclusion strengthens the regional dimension of compensation for marine pollution damage and connects national liability mechanisms with the broader Black Sea environmental governance framework (Black Sea Commission, 1992).

The prevention of ship-source pollution is regulated by MARPOL 73/78, which remains the central international convention in this field. It establishes

detailed standards concerning pollution by oil, noxious liquid substances, harmful substances in packaged form, sewage, garbage, and air emissions from ships. MARPOL is primarily preventive in nature, and its standards are important for compensation claims because violation of technical and operational duties may help establish unlawfulness, fault, and causal connection between maritime activity and environmental harm (International Maritime Organization, 1973/1978).

The 1992 International Convention on Civil Liability for Oil Pollution Damage establishes a special liability regime for shipowners and provides a legal basis for compensation when pollution damage results from the escape or discharge of persistent oil from tankers. Its importance lies in the combination of strict liability, limitation of liability, and compulsory insurance, which increases the practical enforceability of claims in oil pollution cases (International Maritime Organization, 1992).

A complementary role is played by the International Convention on Civil Liability for Bunker Oil Pollution Damage of 2001. This Convention applies to pollution damage caused by bunker oil used or intended to be used for the operation or propulsion of ships. It is relevant because marine pollution may arise from oil carried as cargo by tankers and from fuel used for the operation or propulsion of different categories of vessels. The Convention strengthens the financial security of compensation claims by requiring registered owners of certain ships to maintain insurance or other financial security (International Maritime Organization, 2001).

National environmental legislation of Ukraine develops the constitutional guarantee of environmental protection and compensation. The Law of Ukraine "On Environmental Protection" establishes the basic principles of environmental policy, including priority of environmental safety, compensation for damage caused by violation of environmental legislation, and responsibility of enterprises, institutions, organizations, and citizens for environmental harm. These provisions form the general legal basis for claims related to pollution of water bodies, coastal zones, and marine ecosystems (Law of Ukraine "On Environmental Protection", 1991).

The Water Code of Ukraine is also relevant for marine pollution because it regulates the protection and use of water resources and establishes duties concerning prevention of pollution, contamination, and depletion of waters. Although the marine environment has specific legal features, pollution of coastal waters, estuaries, ports, and connected water bodies often falls within the broader water protection regime. The Code strengthens the idea that water resources are objects of special public protection and that persons who violate water legislation must compensate the damage caused by such violations (Water Code of Ukraine, 1995).

The Merchant Shipping Code of Ukraine provides the sectoral legal framework for maritime activity,

including the status of vessels, shipowners, carriage by sea, maritime incidents, and liability connected with navigation. Its importance for compensation for marine pollution damage lies in the fact that environmental harm at sea is often caused by vessels, cargo operations, port activities, collisions, accidents, or improper handling of dangerous substances. Therefore, maritime law rules must interact with environmental legislation and civil liability mechanisms in order to ensure effective compensation (Merchant Shipping Code of Ukraine, 1995).

Civil law provides the general legal basis for compensation for damage. Under Article 1166 of the Civil Code of Ukraine, property damage caused by unlawful decisions, actions, or omissions to personal non-property rights or property of a natural or legal person is compensated in full by the person who caused it. This principle is significant for marine pollution cases because affected individuals, businesses, communities, and public authorities may rely on civil liability rules when seeking recovery of losses (Civil Code of Ukraine, 2003).

Administrative and criminal liability mechanisms perform an additional protective function. Administrative sanctions may apply to violations of environmental protection rules, water protection requirements, and maritime safety standards, while criminal liability may arise in cases of serious pollution that creates danger to life, health, or the environment. These forms of liability strengthen compensation by increasing enforcement pressure and encouraging polluters to prevent environmental harm and participate in restoration measures (Criminal Code of Ukraine, 2001).

The effectiveness of compensation also depends on environmental impact assessment. The Law of Ukraine "On Environmental Impact Assessment" establishes procedures aimed at identifying, evaluating, and preventing significant environmental consequences before potentially harmful activities begin. In the maritime context, this law is relevant for port construction, dredging, coastal infrastructure, industrial facilities, and other projects that may affect marine ecosystems. Proper assessment reduces future compensation disputes because it clarifies risks, duties, mitigation measures, and public participation requirements before damage occurs (Law of Ukraine "On Environmental Impact Assessment", 2017).

The human rights component of the legal framework is strengthened by the Aarhus Convention, which guarantees access to environmental information, public participation in decision-making, and access to justice in environmental matters. In marine pollution cases, these procedural rights are essential because affected communities and civil society organizations need information about the source of pollution, the scale of damage, the calculation of compensation, and the

use of recovered funds. Without procedural openness, compensation risks becoming a closed administrative or judicial process detached from the interests of the public (UNECE, 1998).

The European human rights framework also affects compensation for environmental damage. The European Court of Human Rights has developed case law in which severe environmental pollution may interfere with private and family life, home, and property interests. This approach is relevant for marine pollution cases because harm to coastal areas, fisheries, housing, health, and economic activity may create consequences that go beyond ecological degradation. It places a positive obligation on the state to organize an effective legal system capable of preventing environmental harm, responding to violations, and providing remedies (European Court of Human Rights, 2024).

Thus, the legal framework for compensation for marine environmental pollution in Ukraine has a multi-level character. It combines constitutional guarantees, international maritime obligations, environmental legislation, civil liability, administrative and criminal enforcement, and human rights standards. Each of these elements performs its own function. Constitutional norms establish the value foundation of environmental safety and the right to compensation. International maritime law defines the duties of states and shipowners in relation to the protection of the marine environment. National environmental legislation determines the general rules of prevention, control, and responsibility. Civil law provides the basic mechanism for recovering damage. Administrative and criminal law create additional instruments of coercion where pollution results from unlawful conduct.

The central difficulty lies in the practical coordination of these legal levels. Marine pollution cases often require simultaneous application of environmental norms, maritime safety rules, civil liability provisions, procedural rules, and international standards. If these elements operate separately, compensation becomes fragmented and slow. The injured person, community, or state authority may face difficulties in proving the source of pollution, calculating the amount of damage, establishing causation, and ensuring actual recovery from the responsible person. Therefore, the effectiveness of legal regulation depends on the ability of the state to transform separate legal norms into a coherent compensation mechanism.

Such a mechanism should cover the entire legal cycle of response to marine pollution. The fact of pollution must be detected and documented through reliable monitoring, expert assessment, and proper procedural fixation of evidence. The responsible person must then be identified with due regard to maritime, environmental, and civil liability rules. The amount of damage should be calculated through methods capable of reflecting economic losses, ecological degradation,

and the cost of restoration. Compensation may be recovered through administrative, judicial, or insurance mechanisms, depending on the nature of the violation and the status of the responsible person. The recovered funds should be directed toward ecological restoration instead of being absorbed into general public revenues without a clear environmental purpose.

In this sense, compensation for marine environmental pollution should be understood as a legal bridge between economic activity, environmental security, and the protection of fundamental rights. It allows maritime economic activity to continue under predictable legal conditions, while ensuring that the costs of pollution are borne by those who create environmental risks. At the same time, it gives practical meaning to the constitutional right to a safe environment, since this right becomes enforceable through specific procedures for damage assessment, recovery, and restoration. The future development of Ukrainian legislation should therefore focus on strengthening the connection between liability, compensation, public participation, and the real rehabilitation of the marine environment.

3. Economic and Institutional Mechanisms of Compensation for Marine Pollution Damage

Compensation for marine pollution damage should be analysed as a practical economic and institutional mechanism. Legal rules define rights and obligations, while economic and institutional mechanisms determine whether these rights can be effectively enforced. Marine pollution usually creates complex consequences that affect public resources, private property, business activity, coastal communities, human health, and the long-term condition of ecosystems. For this reason, the compensation mechanism must connect legal liability, environmental assessment, financial recovery, institutional coordination, and ecological restoration.

Marine pollution damage may include several groups of losses. Direct property damage arises when pollution harms vessels, fishing equipment, port infrastructure, coastal facilities, private property, or commercial assets. Cleanup costs include expenses for collecting pollutants, restoring shorelines, removing contaminated materials, conducting laboratory analysis, and organizing emergency response. Economic losses may also affect fisheries, aquaculture, tourism, maritime transport, and other activities that depend on the quality and accessibility of the marine environment. Ukrainian environmental legislation recognizes the duty to compensate damage caused by violations of environmental law, which creates the general legal basis for such claims (Law of Ukraine "On Environmental Protection", 1991).

A separate category consists of damage caused to water resources and marine ecosystems as public environmental goods. Such harm may include

deterioration of water quality, pollution of coastal waters, destruction of habitats, death or reduction of aquatic biological resources, disruption of natural reproduction processes, and long-term degradation of ecosystem functions. This type of damage is difficult to reduce to ordinary market value because marine ecosystems perform ecological functions that support climate regulation, biodiversity, food chains, coastal protection, recreation, and public health. The Water Code of Ukraine links the protection of water resources with the duty to prevent pollution and to compensate damage caused by violations of water legislation (Water Code of Ukraine, 1995).

Marine pollution may also produce harm to human health and living conditions. Contaminated water, polluted beaches, toxic substances in fish and seafood, unpleasant odours, restrictions on bathing, and deterioration of coastal living conditions may directly affect individuals and communities. In such cases, compensation has a human rights dimension because environmental degradation may interfere with private life, home, health, and the normal use of property. The European Court of Human Rights has repeatedly treated serious environmental pollution as capable of falling within the scope of Article 8 of the European Convention on Human Rights, which confirms the legal connection between environmental harm and fundamental rights (European Court of Human Rights, 2024).

Economic damage from marine pollution may extend beyond the immediate location of the incident. Pollution can reduce fish catches, interrupt port operations, limit navigation, damage recreational areas, decrease tourism revenues, increase insurance costs, and weaken investment attractiveness of coastal regions. These consequences demonstrate that marine environmental damage is also a factor of regional economic security. The loss of confidence in the environmental safety of a coastal area may continue after the visible pollution has been removed, especially where the public doubts the quality of monitoring, state response, or compensation procedures.

The classical civil law model of compensation is often insufficient for marine environmental damage. Civil liability is traditionally built around the injured person, the wrongdoer, damage, unlawfulness, fault, and causation. Marine pollution complicates this model because the injured object is frequently a public good without a single individual owner. The sea, coastal waters, biological resources, and ecosystem services belong to the sphere of collective interest. For this reason, compensation must have a strong public law component and should be aimed at restoring the affected environment as well as compensating individual economic losses.

The institutional mechanism of compensation begins with detection and documentation of pollution.

Effective response requires environmental monitoring, sampling of water and sediments, expert assessment, identification of pollutants, determination of the source of discharge, and proper procedural recording of evidence. In maritime cases, this process may also require vessel data, port records, cargo documentation, navigation information, satellite images, and cooperation between environmental, maritime, and law enforcement authorities. Without reliable evidence at the initial stage, later calculation of damage and recovery of compensation becomes legally vulnerable.

The State Environmental Inspectorate plays an important role in the practical calculation of environmental damage, since it applies official methodologies for determining losses caused to the environment. Ukrainian practice relies on approved methodologies that establish formulas and indicators for calculating damage caused by pollution or clogging of waters and unauthorized use of water resources. These methodologies are necessary because they provide a formal basis for claims and reduce discretion in the determination of compensation amounts (Ministry of Environmental Protection and Natural Resources of Ukraine, 2022).

At the same time, damage assessment methodologies face serious practical limitations. Standard formulas can calculate certain types of pollution, but they may fail to reflect the real ecological value of damaged marine ecosystems, the long-term effects of pollutants, the cumulative impact of repeated contamination, and the loss of biodiversity. A methodology may show a monetary amount, yet this amount does not always correspond to the actual cost of restoring the marine environment. This creates a gap between formal compensation and ecological reality.

The problem of causation is also central. Marine pollution may result from several sources, including vessels, port operations, industrial discharges, land-based runoff, military activity, waste disposal, or accidental spills. Currents, weather conditions, and the movement of ships may complicate the identification of the responsible person. In such cases, the compensation mechanism must rely on scientific evidence, monitoring data, expert conclusions, and procedural rules that allow the court or administrative authority to connect the pollution with a specific source. Weak causation evidence often becomes the main obstacle to successful recovery of compensation.

The calculation of damage should cover economic losses, ecological degradation, and restoration costs. Economic losses may include lost income of fishermen, reduced tourism revenue, interruption of port activity, damage to property, and additional operational costs for businesses. Ecological degradation may include the death of marine organisms, contamination of habitats, decline of biodiversity, and disruption of ecosystem services. Restoration costs may include cleanup

operations, rehabilitation of coastal areas, replenishment of biological resources, long-term monitoring, and scientific assessment. A compensation model that ignores any of these components remains incomplete.

The destination of recovered funds is a separate institutional issue. If compensation is transferred to general public revenues without a clear environmental purpose, the legal result of the case may be formally achieved while the damaged marine environment remains unrestored. Therefore, an effective system should ensure a link between recovery of compensation and actual ecological rehabilitation. This may require special budget programs, environmental funds, transparent reporting, or direct financing of restoration measures in affected coastal areas.

Insurance mechanisms are also important for the economic functioning of compensation. Marine pollution incidents may cause damage exceeding the ordinary financial capacity of a shipowner or operator. International maritime practice therefore uses compulsory insurance, financial security, and protection and indemnity mechanisms. These instruments increase the probability that compensation will actually be paid. In oil pollution cases, international civil liability rules are built around the responsibility of the shipowner and the availability of insurance or other financial security (International Maritime Organization, 1992).

The institutional chain of compensation involves several actors. Environmental authorities detect and assess pollution. Maritime authorities provide information on vessels, navigation, port activities, and maritime safety. Local self-government bodies represent the interests of coastal communities and may document local economic and social consequences. Prosecutors and public authorities may bring claims in the interests of the state. Courts determine liability, causation, and the amount of compensation. Insurance institutions and shipowners provide the financial source for payment. The effectiveness of the system depends on whether these actors operate within a coordinated procedure.

Digital technologies can strengthen the institutional mechanism of compensation. Satellite monitoring, vessel tracking systems, electronic port documentation, drones, geographic information systems, and open environmental data can help identify pollution sources and support evidence in administrative or judicial proceedings. Digital evidence is especially important in maritime cases because pollution may spread rapidly and physical traces may disappear before traditional inspection measures are completed. The modernization of compensation mechanisms should therefore include procedural rules for the use, verification, and admissibility of digital environmental evidence.

The practical compensation cycle should include detection of pollution, sampling and expert examination,

identification of the source of pollution, calculation of damage according to official methodology, preparation of a claim by the competent authority or injured person, judicial or administrative recovery of compensation, enforcement of the decision, and public reporting on the use of recovered funds. This sequence is important because liability rules become effective when institutions are able to move from evidence to restoration without procedural gaps.

The economic and institutional model of compensation should also include preventive incentives. If polluters know that environmental harm will lead to reliable detection, scientifically grounded calculation of damage, effective court recovery, insurance consequences, and public disclosure, they have stronger reasons to comply with environmental and maritime safety standards. In this sense, compensation performs a regulatory function. It changes the economic calculation of risk and makes pollution more expensive than compliance.

Thus, compensation for marine pollution damage operates through a chain of economic and institutional actions. Damage must be classified, evidence must be secured, the responsible person must be identified, losses must be calculated, compensation must be recovered, and funds must be directed toward restoration. The main weakness of the current model lies in the possible gap between formal monetary recovery and real ecological rehabilitation. Future reform should therefore focus on improving damage assessment methodologies, strengthening causation evidence, coordinating institutions, expanding the use of digital monitoring, and ensuring that compensation serves the actual recovery of the marine environment.

4. Balancing Economic Interests and Environmental Rights in Marine Pollution Cases

The balancing of economic interests and environmental rights is the central legal problem in cases of marine pollution. Maritime activity creates substantial public and private value because it supports trade, transport, employment, food supply, tourism, investment, and regional development. At the same time, the marine environment is a vulnerable ecological system whose degradation may directly affect human health, property, local communities, and the right to a safe environment. Legal regulation must therefore create conditions under which economic activity remains possible, while environmental harm is prevented, compensated, and remedied.

Economic interests connected with the sea require legal protection because they are part of the normal functioning of the state and the market. Maritime shipping ensures the movement of goods and supports export and import operations. Port logistics connects

national production with global supply chains. Fisheries and aquaculture provide income, employment, and food resources. Tourism and recreation form the economic basis of many coastal communities. Energy projects, transport services, insurance, and maritime finance also depend on predictable legal conditions for the use of the sea.

The legitimacy of economic interests does not make them absolute. The right to conduct business and use maritime infrastructure exists within the limits established by environmental safety, public health, and the rights of other persons. This is especially important where commercial activity creates risks for water quality, biodiversity, coastal ecosystems, and the livelihood of local communities. The constitutional protection of entrepreneurship must therefore be interpreted together with the constitutional guarantee of environmental safety and the right to compensation for environmental harm (Constitution of Ukraine, 1996).

A proper legal balance requires the state to assess whether maritime economic activity was lawful, whether environmental risks were foreseeable, whether preventive measures were taken, and whether the operator complied with safety and environmental standards. The legality of economic activity cannot be assessed only by the existence of a permit or a commercial purpose. It must also include actual compliance with environmental duties, monitoring requirements, waste management rules, technical safety standards, and emergency response obligations.

The principle of proportionality provides the legal method for balancing economic interests and environmental rights. It requires public authorities and courts to assess whether interference with economic freedom pursues a legitimate aim, whether the chosen measure is suitable for achieving that aim, whether a less restrictive alternative is available, and whether the burden imposed on the person or business is excessive in relation to the public interest protected. In environmental cases, this public interest includes the protection of life, health, property, biodiversity, and ecological security.

In marine pollution cases, proportionality should also be applied to compensation. The amount of compensation must be sufficient to reflect the real consequences of pollution, including cleanup costs, economic losses, ecological degradation, and restoration expenses. A symbolic or artificially low amount weakens prevention and shifts part of the environmental burden to society. At the same time, compensation must be based on evidence, lawful methodology, and a clear causal connection between the conduct of the responsible person and the damage.

The European human rights approach confirms that environmental protection and economic activity must be assessed through a fair balance. The European Court of Human Rights has recognized that serious

environmental pollution may affect private life and home under Article 8 of the Convention. This means that states have positive obligations to regulate dangerous activities, provide access to information, protect individuals from serious environmental risks, and ensure effective remedies where harm occurs (European Court of Human Rights, 2024).

The balance between economic interests and environmental rights should be understood as a legal framework that allows maritime economic activity only within limits compatible with the right to a safe environment. Where pollution makes coastal living unsafe, destroys fisheries, contaminates beaches, damages biodiversity, or deprives communities of normal use of the sea, economic freedom loses its legal justification unless full prevention, response, and compensation mechanisms are activated.

The polluter pays principle is one of the key instruments for achieving this balance. It requires that the costs of pollution prevention and control be allocated to the polluter rather than to society. This principle changes the economic logic of environmental harm because it prevents businesses from externalizing the costs of risky activity. If the polluter bears the cost of prevention, monitoring, cleanup, compensation, and restoration, environmental responsibility becomes part of the real price of maritime economic activity (OECD, 1972).

The European Union model of environmental liability also relies on the polluter pays principle. The Environmental Liability Directive establishes a framework for environmental liability aimed at preventing and remedying environmental damage. Its logic is important for Ukraine because European integration requires the development of legal mechanisms that connect economic activity with responsibility for environmental consequences. The operator whose activity causes environmental damage must bear the costs of preventive and remedial measures rather than transferring these costs to the state or affected communities (European Union, 2004).

In the maritime sphere, the polluter pays principle should cover several categories of costs. These include prevention, monitoring, emergency response, cleanup, expert assessment, compensation of affected persons, restoration of ecosystems, and long-term environmental control. If any of these costs are left to the state, coastal communities, or future generations, the legal mechanism becomes incomplete. A business that receives economic benefit from risky maritime activity should also bear the financial consequences when that activity causes environmental harm.

This principle also prevents the state from indirectly subsidizing environmental misconduct. When cleanup costs are paid from public funds while the responsible person avoids full liability, society pays for private risk. Such a model is economically unfair and

legally dangerous because it weakens incentives for compliance. The state may participate in emergency response, especially where immediate action is needed, but it should preserve the possibility of recovering costs from the responsible person through administrative, judicial, or insurance mechanisms.

Insurance and compensation funds support the application of the polluter pays principle by ensuring that money is available when pollution damage occurs. International maritime law recognizes that major oil pollution incidents may exceed the financial capacity of an individual shipowner. For this reason, civil liability conventions, compulsory insurance, and the International Oil Pollution Compensation Funds form a multi-layered system of financial protection for victims of oil pollution damage (IOPC Funds, 2025).

At the same time, liability limits and insurance coverage may create difficulties where the actual damage exceeds the available compensation. Large-scale marine pollution can cause long-term harm to biodiversity, tourism, fisheries, public health, and the reputation of a coastal region. Some of these losses are difficult to quantify and may appear after a significant period. Therefore, insurance must function as a financial guarantee rather than a replacement for preventive control, environmental monitoring, and strict liability for violations.

Marine pollution should also be understood as a threat to economic security. It can disrupt food supply by damaging fisheries and aquaculture. It can weaken maritime trade by affecting ports, shipping routes, and confidence in coastal infrastructure. It can reduce investment attractiveness where investors perceive environmental governance as weak or unpredictable. It can increase public health costs and create social tension in coastal communities that depend on the sea for employment, recreation, and identity.

Environmental damage may also affect the international reputation of the state. A country that cannot prevent, document, or compensate marine pollution may be perceived as a jurisdiction with weak environmental governance. This matters for international trade, European integration, donor support, insurance markets, and cross-border cooperation. In the Black Sea region, where pollution may have transboundary effects, institutional credibility becomes a component of regional security and diplomatic cooperation.

For Ukraine, the economic security dimension is intensified by war and post-war recovery. Damage to ports, vessels, coastal infrastructure, industrial facilities, and maritime routes creates additional environmental risks. Pollution in the Black Sea and the Sea of Azov may affect export capacity, food security, reconstruction projects, and the social stability of coastal communities. In this context, compensation for marine pollution damage becomes part of a broader strategy of environmental recovery and economic resilience.

A realistic balance between economic interests and environmental rights is achieved through predictable rules rather than through the weakening of environmental standards for business. Business needs clarity about duties, permits, insurance, monitoring, liability limits, and consequences of violations. The state needs effective tools for inspection, evidence collection, damage calculation, and recovery of compensation. Citizens and communities need access to information, participation, and judicial protection. When these elements operate together, environmental protection becomes compatible with responsible maritime development.

The final legal conclusion of this section is that economic activity at sea is legitimate only when it remains environmentally responsible, socially acceptable, and legally accountable. Compensation for marine pollution damage must therefore operate as a balancing mechanism. It protects economic circulation by creating predictable rules for liability and insurance. It protects the environment by making restoration financially possible. It protects human rights by ensuring that affected persons and communities have effective remedies. The future development of Ukrainian law should be based on this integrated model, where maritime economic growth is inseparable from ecological safety and the enforceability of the right to a safe environment.

5. Conclusion

The analysis demonstrates that compensation for damage caused by marine environmental pollution should be understood as a complex legal, economic, and human rights instrument. It connects environmental protection, maritime safety, civil liability, public administration, economic security, and the constitutional right to a safe environment. Through this instrument, the state ensures that the use of the sea remains legally responsible, economically predictable, and socially acceptable.

The legal framework of compensation has a multi-level structure. It includes constitutional guarantees, international maritime obligations, national environmental legislation, civil liability rules, administrative and criminal enforcement, and human rights standards. The main challenge is to transform these separate legal elements into a coherent mechanism capable of detecting pollution, identifying the responsible person, calculating damage, recovering compensation, and ensuring ecological restoration.

Marine pollution damage has a complex structure. It may include property damage, cleanup costs, losses of fisheries and tourism, harm to port infrastructure, deterioration of public health, loss of ecosystem services, long-term biodiversity damage, and reputational losses for coastal regions. This complexity

shows that a narrow civil law approach is insufficient, since marine ecosystems are public environmental goods and damage to them often affects society as a whole.

The institutional mechanism of compensation must cover the entire cycle of response to marine pollution. Pollution must be documented, scientifically assessed, and procedurally recorded. The responsible person must be identified through reliable evidence. Damage must be calculated with methods that reflect economic losses, ecological degradation, and restoration costs. Recovered funds should be directed toward actual ecological rehabilitation, since monetary recovery without restoration does not fully protect the marine environment.

Insurance and compensation funds play an important role in the economic architecture of liability. Compulsory insurance, P&I Clubs, international compensation funds, and financial security mechanisms increase the likelihood that compensation will be available where pollution damage exceeds the immediate capacity of the polluter. Insurance must remain a financial guarantee rather than a substitute for environmental control, prevention, monitoring, sanctions, and restoration obligations.

The balance between economic interests and environmental rights is the central legal issue in marine pollution cases. Maritime shipping, port logistics, fisheries, tourism, energy projects, insurance, and transport business are legitimate interests that require legal certainty. Yet these interests remain limited by environmental safety, public health, and the rights of coastal communities. Economic activity at sea is lawful only when it prevents environmental harm and ensures full responsibility where such harm occurs.

The polluter pays principle should become the core of the Ukrainian model of compensation for marine pollution damage. The polluter must bear the costs of prevention, monitoring, emergency response, cleanup, compensation, restoration, and long-term environmental control. Economic benefit from risky maritime activity must be accompanied by financial responsibility for its consequences.

For Ukraine, this issue has strategic importance. Pollution of the Black Sea and the Sea of Azov affects national security, food security, export potential, port infrastructure, public health, investment attractiveness, and social stability of coastal communities. In the context of war and post-war reconstruction, marine environmental damage becomes part of a broader problem of economic resilience and environmental recovery.

Future development of Ukrainian legislation should focus on modernizing damage assessment methodologies for marine ecosystems, strengthening procedural rules for digital evidence, improving

coordination between environmental and maritime authorities, and ensuring that recovered compensation is linked with transparent restoration programs. Such a model would make pollution economically irrational, legally risky, and institutionally traceable.

It would give practical meaning to the constitutional right to a safe environment, strengthen public trust in environmental governance, and align Ukrainian law with European standards of ecological accountability and human rights protection.

References:

- Black Sea Commission (1992). *Convention on the Protection of the Black Sea Against Pollution*. <https://www.blackseacommission.org/Downloads/Convention.pdf>
- Civil Code of Ukraine (2003, January 16). <https://zakon.rada.gov.ua/laws/show/435-15#Text>
- Constitution of Ukraine (1996, June 28). <https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80#Text>
- Criminal Code of Ukraine (2001, April 5). <https://zakon.rada.gov.ua/laws/show/2341-14#Text>
- European Court of Human Rights (2024). *Environment and the European Convention on Human Rights*. https://www.echr.coe.int/documents/d/echr/fs_environment_eng
- European Union (2004). *Directive 2004/35/EC of the European Parliament and of the Council on environmental liability with regard to the prevention and remedying of environmental damage*. <https://eur-lex.europa.eu/legal-content/ENG/ALL/?uri=CELEX:32004L0035>
- International Maritime Organization (1973/1978). *International Convention for the Prevention of Pollution from Ships*. <https://www.imo.org/en/about/conventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-%28marpol%29.aspx>
- International Maritime Organization (1992). *International Convention on Civil Liability for Oil Pollution Damage*. <https://www.imo.org/en/about/conventions/pages/international-convention-on-civil-liability-for-oil-pollution-damage-%28cl%29.aspx>
- International Maritime Organization (2001). *International Convention on Civil Liability for Bunker Oil Pollution Damage*. <https://www.imo.org/en/about/conventions/pages/international-convention-on-civil-liability-for-bunker-oil-pollution-damage-%28bunker%29.aspx>
- International Oil Pollution Compensation Funds (2025). *Compensation and claims management*. <https://iopcfunds.org/compensation/>
- Law of Ukraine “On Environmental Impact Assessment” (2017, May 23). Available at: <https://zakon.rada.gov.ua/laws/show/2059-19#Text>
- Law of Ukraine “On Environmental Protection” (1991, June 25). <https://zakon.rada.gov.ua/laws/show/1264-12#Text>
- Merchant Shipping Code of Ukraine (1995, May 23). <https://zakon.rada.gov.ua/laws/show/176/95-%D0%B2%D1%80#Text>
- Ministry of Environmental Protection and Natural Resources of Ukraine (2022). *Methodology for determining damages caused by pollution and/or clogging of waters and unauthorized use of water resources*, Order No. 252 of 21 July 2022. <https://zakon.rada.gov.ua/laws/main/z0900-22#Text>
- OECD (1972). *Recommendation of the Council on Guiding Principles concerning International Economic Aspects of Environmental Policies*. <https://legalinstruments.oecd.org/public/doc/4/4.en.pdf>
- UNECE (1998). *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*. <https://unece.org/environment-policy/public-participation/aarhus-convention/text>
- United Nations (1982). *United Nations Convention on the Law of the Sea*. https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf
- Water Code of Ukraine (1995, June 6). <https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80#Text>

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