

Innovations in Legal Regulation of Environmental Protection: International Experience in Combating Environmental Crimes

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ABSTRACT

This article aims to analyze international practices in combating environmental crimes by examining the latest legal, organizational, and technological frameworks. The ultimate goal is to formulate a comprehensive, interdisciplinary strategy for effective counteraction. The research methodology integrates several approaches, including dialectical reasoning, comparative analysis, and system-functional methods. It is further supported by legal-dogmatic interpretation and logical techniques such as analysis, synthesis, and induction. The study systematically reviews international experiences in combating environmental crimes, identifying new legal standards and technological innovations that define contemporary environmental policy. A key emphasis is placed on the doctrine of ecocide, international responsibility, and joint investigation teams as essential tools for documenting and compensating for damages, especially within the context of armed conflict. Ukraine's national experience in implementing these standards serves as a central case study. The findings underscore the necessity of comprehensive interdisciplinary policies, strong international coordination, and technological modernization to effectively address transnational eco-crime. By analyzing these global trends, this paper proposes a system of practical, legal, and strategic solutions to meet the most pressing contemporary challenges in ecosystem protection.

Keywords: environmental crimes, prevention, international experience, ecocide, environmental safety, legal liability, criminalization.

1. Introduction

The global ecological crisis of the 21st century is characterized by an unprecedented increase in the level of environmental crime, which is acquiring a transnational character and requires fundamentally new legal approaches to counteract it (Nellemann et al., 2018). Modern societies demonstrate deepened consumer behavior regarding natural resources, which not only undermines the foundations of sustainable development but also stimulates the growth of organized environmental crime on a global

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scale, making it the fourth largest form of transnational crime (Earth League International & John Jay College of Criminal Justice, 2022). The problem becomes particularly acute in the context of armed conflicts, where military actions lead to the destruction of ecological systems and the activation of organized crime in the field of natural resource management.

Environmental crime accounts for almost one third of corporate crimes and is the fourth largest criminal activity in a growing world, which increases by 5–7% annually and reaches €80-230 billion lost annually (European Commission, 2025). Although international statistics are scarce, they include overfishing in industrial waters, illegal logging, air, water and soil pollution by industrial waste, and the killing of wildlife. Since 1970, the populations of mammals, fish, birds, reptiles and amphibians have declined by an average of 69%. More than 500 species of land animals are on the verge of extinction. About 30% of the waters where fishing takes place are classified as "overfished" (SaveDnipro, 2023).

Military action also results in significant pollution, destruction of natural sites and loss of biodiversity. Since the beginning of the full-scale invasion in Ukraine, environmental crimes have been carefully documented. As of the beginning of 2025, more than 7,500 cases of environmental offences have been recorded, which has already resulted in losses of 82 billion euros. This does not take into account the recent damage to the Chernobyl convoy. The destruction of the Kakhov dam, poisoning of the Seim river, a large oil spill in the Kerch strait caused by the accident of Russian tankers «Volgoneft-212» and «Volgoneft-239», as well as the dilapidated state of the Chernobyl settlement are some of the most. In addition, almost 25% of the total territory of Ukraine is contaminated with explosive substances, 557 mines are under occupation and do not have proper care. There are 10 national parks, 8 nature reserves and 2 biosphere reserves under occupation. 744 water facilities were also damaged, requiring €7.7 billion to be restored (Ministry of the Environment and Natural Resources of Ukraine, 2025). To enhance clarity of the data provided, we have presented them in tabular form (Table 1).

Table 1. Environmental Crime: Scale, Types, and Consequences

Category	Indicator	Value / Description
Scale & Finance	Global Rank	#4 (among all forms of organized crime)
	Share of Corporate Crime	~33% (almost one-third)
	Annual Growth Rate	+5–7% annually
	Annual Losses	€80–230 billion
Main Types	Water Resources	Illegal (industrial) fishing
	Forest Resources	Illegal logging
	Environment	Pollution of air, water, and soil by industrial waste
	Wildlife	Poaching and illegal wildlife trade
Impact on Biodiversity	Population Decline (since 1970)	-69% (mammals, fish, birds, reptiles, amphibians)

(since 1970)	Extinction Threat	>500 species of land animals
	Depletion of Fish Stocks	~30% of fisheries are classified as "overfished"

The environmental consequences of the war against Ukraine have not only a national but also a global dimension. The environmental damage caused to Ukraine has ripple effects throughout Europe. Air pollution, water pollution and the destruction of vital ecosystems are problems that do not stop at national borders. Today we not only document crimes against the environment, but also lay the foundation for sustainable renewal to make Ukraine an environmentally friendly and energy-independent country of the future.

Considering the stated above, specialized international forums, particularly ECO-SOLVE 2025 and the 34th session of the UN Commission on Crime Prevention and Criminal Justice, confirm the need to form a coordinated international counteraction policy and establish informal interdisciplinary links between law enforcement, judicial, and environmental protection institutions (Global Initiative Against Transnational Organized Crime, 2025).

Branching out of modern environmental crime, covering the spectrum from illegal logging, wildlife trafficking, and illegal mining to cybercrimes in the environmental sphere and violations of water resources during conflicts, necessitates the development and implementation of fundamentally new mechanisms for preventing, detecting, documenting, and compensating environmental damage. An analysis of international practice indicates that over 164 countries have criminalized wildlife offenses, but only 45% apply a sentence of more than four years' imprisonment, which indicates an uneven legislative approach. The currency used in legislation to calibrate fines raises another problem of comparisons. In many cases, fines are provided in local currencies. However, 19 countries have established penalties in currencies that are no longer in use. Although many of them could be converted into US dollar equivalents, the outdated nature of the legislation implies limited oversight. In 8 of these countries, currency conversion is not possible at all. In addition to the above, 94 countries have legislation in place that defined financial penalties in other units (currency exchange points, tax benefits, minimum wage) or that the fine will be calculated on the basis of lost value or damage caused. Consequently, there is no uniformity, as countries often used mixed types of fines (Hutchinson, Camino-Troya, & Wyatt, 2023).

Effectively confronting modern environmental challenges requires more than just improving national laws; it demands the harmonization of international standards, strengthened global cooperation, and the implementation of cutting-edge technologies like drones, satellite imagery, and AI for monitoring and investigating eco-crimes. A central and increasingly urgent task is to codify "ecocide" in international law and establish effective accountability mechanisms for large-scale environmental destruction during armed conflicts.

The purpose of this article is to analyze global best practices in combating environmental crime, considering recent legal, organizational, and technological advancements. By examining transnational trends, the effectiveness of legal instruments

(including the recognition of ecocide), and the role of digital tools, this study aims to develop a comprehensive, interdisciplinary strategy. Ultimately, it will provide recommendations for Ukraine that are tailored to the realities of wartime and the opportunities for international partnership.

2. Method

The research is based on a significant number of approaches, methods, and techniques aimed at objectively revealing the features of investigating international experience in combating environmental crimes and providing recommendations for its improvement. Dialectical method served as the basis for examining new approaches and mechanisms of the world community to fight this negative phenomenon. Legal and dogmatic approach contributed to studying international regulatory framework for criminal liability for environmental offenses. Regional experience and institutional innovations on the issue under consideration were investigated due to comparative and system-functional methods. The role of the ECtHR and international courts (International Criminal Court and International Court of Justice) in preventing environmental crimes was examined using formal and legal method. Dogmatic approach was helpful in revealing basic concepts of the research: "qualified crime", "ecological offenses", "ecocide", etc. Analysis, synthesis, deduction, and induction as logical techniques were applied to the examination of Ukraine's initiatives aimed at ensuring international legal responsibility for environmental crimes occurring in the context of armed aggression. Summarization approach allowed to formulate the conclusion deriving from the conducted research.

3. Results and discussion

Current regulatory framework

The international regulatory framework for criminal liability for environmental offenses has undergone significant evolution over the past five years, demonstrating an undeniable trend towards strengthening repressive mechanisms and harmonizing legislative approaches. It is important to note that in April 2024, the revolutionary EU Directive 2024/1203 came into force, which not only expanded the list of environmental crimes to 20 categories but also detailed sanctions for natural and legal persons, introduced the concept of "qualified crime", and created an autonomous system of environmental criminal liability (Faure, 2024).

The EU Directive establishes strict maximum penalties for environmental crimes, differentiated according to the severity of the offense. Individuals face significant prison sentences of 4 to 10 years, and legal entities face huge fines of up to 5% of global turnover or EUR 40 million. In addition, additional sanctions are applied, such as confiscation of profits and property, prohibition of activities, environmental restoration obligations, prohibition of participation in public procurement and revocation of environmental licenses. In particular, intentional actions with fatal consequences or serious environmental damage are punishable by imprisonment for 10+ years and a fine of 5% of turnover/40 million euros. Significant damage to ecosystems is punishable by 8+ years and similar fines. Illegal handling of hazardous waste or use of banned chemicals – 5-6+ years and fines of

3% of turnover/24 million euros. Massive deforestation – 7+ years and 4% of turnover/32 million euros. Falsification of permits – 4+ years and 2% of turnover/16 million euros. Cross-border crimes – 5+ years and 3% of turnover/24 million euros. This comprehensive approach is designed to effectively influence corporate responsibility and emphasizes the priority of environmental protection in the EU (Hutsol, 2025).

A fundamentally new approach of Directive 2024/1203 is the implementation of the concept of autonomous environmental crimes, which are recognized as unlawful even if administrative permits exist, provided they were obtained fraudulently or violate fundamental principles of environmental law (Barlow, 2025). New provisions regarding negligent or careless actions are aimed at strengthening prevention and consolidating international standards for environmental protection, extending criminal liability to acts that, while not intentional, cause or create a serious risk of irreversible environmental damage (Pereira, 2024).

According to Article 28 of the Directive, Member States are obliged to enact laws and other regulations necessary for its implementation by May 21, 2026. In order to comply with this provision, Member States are already taking steps to prepare for the transposition of this document into their domestic law.

Concurrently, the UN is intensifying the review of the global legal framework: in June–July 2025, an intergovernmental expert group meeting was held within the framework of UNTOC ("UN Convention against Transnational Organized Crime"), which is considering the need for a specific protocol to combat environmental crimes, taking into account the EU experience and interdisciplinary interaction practices (UNODC, 2025). This is the first time in UNTOC's history that the possibility of creating an additional protocol on environmental crimes is being officially considered, indicating the recognition of this problem at the highest international level (Muggah, 2025).

The doctrine of ecocide as an international crime has acquired particular significance, gaining legal materialization due to the efforts of Ukrainian and foreign scholars, and is also included in draft criminal legislation in several countries, including Italy, Argentina, and Congo. In September 2024, Vanuatu, Fiji, and Samoa formally submitted a proposal to the International Criminal Court to include ecocide in the Rome Statute as the fifth core international crime, which could fundamentally change approaches to accountability for large-scale environmental destruction (Mehta, 2025).

The progress in approaches to the criminalization of ecocide significantly affects national codifications and mechanisms for international damage compensation, especially in the context of armed conflicts. Ukraine has become a pioneer in the practical application of ecocide rules, filing over 6,500 indictments for environmental crimes, including notices of suspicion against two Russian generals for ecocide and war crimes related to the destruction of the Oskil Dam (Odusanvo, 2024).

Concurrently, the transformation of international cooperation in combating environmental crime is taking place through the creation of specialized mechanisms, including the SIENA platform for information exchange between the EU States and the development of new technologies for monitoring environmental offenses (Oderiy et al., 2024). The 2025 International Court of Justice Advisory Opinion confirmed the States' mandatory legal obligations to protect the climate system and the environment, which creates an additional legal basis for accountability for environmental crimes (Mehta, 2025).

An innovative approach was also the introduction of a gradation of environmental offenses depending on the severity of the damage caused, where "qualified crimes" are punished particularly severely for causing "widespread and substantial damage that is irreversible or long-lasting" (Close, 2024). This two-tiered classification system allows for differentiated penalties according to the scale of environmental damage and creates a legal basis for considering the most serious forms of environmental crimes as international crimes against humanity and the environment.

Finally, modern trends demonstrate the formation of a new paradigm of environmental criminal law, which is evolving from a traditional anthropocentric approach to recognizing the independent legal value of ecosystems and biodiversity, as reflected in the latest legislative initiatives at both national and international levels.

Regional practice

In accordance with historical and legal traditions, the States implement various strategies to combat environmental crimes, demonstrating an evolution from fragmented approaches to comprehensive institutional models. We believe that only targeted policies, combined with a flexible strategy of operational response, will enable countries to withstand the growing threats of transnational environmental activity and consider the specifics of national development, business, public initiatives, and international experience. Let us conduct a scientific analysis of regional experience and institutional innovations introduced in this direction by individual States.

A two-tiered system is typical for the USA, where general federal laws intertwine with special environmental legislation and the active work of regulatory agencies, primarily the EPA. In 2024, the EPA achieved record indicators: 1,851 completed civil cases, 121 criminal cases, and over 8,500 inspections, 53% of which were conducted in communities burdened by pollution (U.S. Environmental Protection Agency, 2024). Recent studies highlight the complexity of prosecutorial discretion and the impact of political changes on the dynamics of detection and prosecution of crimes against the environment, in particular with the introduction of a new «Strategic Policy for Civil-Criminal Law Enforcement» in April 2024, which ensures greater coordination between civil and criminal law enforcement (Taylor et al., 2024).

It is noteworthy that political will and the appointment of highly professional managers directly influence the effectiveness of environmental policy in the USA, and the cumulative nature of sanctions and the public nature of cases against large corporations enhance the preventive effect for the business community.

In the EU, interagency and international police cooperation is constantly being improved: leading States have introduced specialized environmental prosecutor's offices and police units that meet the requirements of the new Directive 2024/1203 and allow for more effective responses to cross-border offenses (Council of the European Union, 2024). Sweden became a pioneer in creating specialized environmental prosecutor's offices 20 years ago, allocating 21 prosecutors to environmental crimes within the National Unit for Environmental and Labor Crimes, which gradually led to a 100% conviction rate. Thus, Sweden has around 850 prosecutors distributed across 35 regional public prosecution offices. In addition to these regional offices, there are four national-level specialized units. One of these is the National Environmental Crimes Unit (REMA), alongside others

focused on corruption, police misconduct, and national security. REMA is a highly specialized unit comprising 20 prosecutors and administrative staff, who are based in various parts of the country.

Besides handling environmental offenses, REMA also deals with crimes related to workplace health and safety. Like other prosecutors in Sweden, REMA prosecutors oversee criminal investigations, authorize the use of coercive measures, initiate legal proceedings, and represent cases in court. They manage the progression of a case both during the investigation phase and throughout court proceedings. REMA receives reports from supervisory authorities and determines whether to initiate a preliminary investigation. If an investigation is launched, the unit provides instructions for conducting interviews, gathering evidence, and collecting samples. It is responsible for overseeing the entire investigative process (Philipsen & Faure, 2015).

The Netherlands established a specialized prosecution service for serious fraud and environmental crimes as part of the national public prosecution service – Openbaar Ministerie – responsible for all criminal enforcement of environmental legislation. The National Office for Major Fraud, Environmental Crime and Asset Confiscation (Functioneel Parket) is responsible for combating fraud and environmental crimes as well as handling complex criminal cases. It is also the expert center of the Office of the Attorney-General for the confiscation of proceeds of crime (Hall & Wyatt, 2017).

It should be emphasized that those systems where environmental prosecutors have constant access to experts, laboratories, and interagency information systems, and are supported by both the national parliament and local self-government, have proven to be the most effective.

An innovative approach was the creation of the European Network of Prosecutors for the Environment (ENPE) in 2012, which brought together the representatives of prosecutorial bodies from 7 European countries and over 40 correspondents across Europe, creating a full chain of representative bodies from inspectors through prosecutors to courts. This network complements the European Union Forum of Judges for the Environment (EUFJE) and the European Network for the Implementation and Enforcement of Environmental Law (IMPEL), creating an integrated system for combating environmental crime at all levels (ENPE, 2025).

The experience of the Amazon region, where the European Union, in cooperation with the Igarapé Institute and the Foundation for Conservation and Sustainable Development, launched the regional initiative "Security, Conflict and Environment in the Amazon" in May 2025, aimed at strengthening regional cooperation in combating environmental crimes and socio-environmental conflicts threatening the Amazon at the borders of Brazil, Colombia, Peru, Ecuador, and Venezuela, deserves particular attention. The project undertakes a rigorous assessment of transnational criminal dynamics, including illegal mining, violent crimes, and money laundering. The findings are intended to inform public policy, bolster environmental governance frameworks, and enhance territorial security, thereby providing crucial support to national governments and regional cooperative bodies (Press and information team of the Delegation of the European Union to Brazil, 2025).

The ECO-SOLVE project, funded by the EU, in its turn, uses artificial intelligence and modern digital analytical tools to create new responses to environmental

crime through a global monitoring system with "data hubs" in key countries. Recognizing that environmental crime is a significant contributor to serious criminal activity and a threat to global peace and security, this project pioneers new responses. It targets the illegal online wildlife trade by extracting data to strengthen enforcement and regulation, while fostering cooperation through the use of advanced technologies like DNA analysis, stable isotopes, and AI. Furthermore, the project investigates and exposes the corrupt networks facilitating illicit timber flows. A key component of its strategy is to empower local communities by integrating their perspectives into policing strategies, ensuring their voices as agents of change are heard in multilateral discussions (European Commission, 2023).

The practice confirms that the scaling of innovations aimed at early prevention and analytics depends on stable international partnerships and flexibility to the specifics of each region.

The Criminal Code of Ukraine contains an expanded scope of norms regarding environmental crimes, in particular, Article 441 on ecocide as "mass destruction of flora or fauna, pollution of the atmosphere or water resources, as well as committing other actions that may cause an ecological catastrophe" (Law of Ukraine No. 2341-III, 2001). At the same time, real effectiveness depends on the availability of a high-quality evidence base, effective cooperation with international audiences, and the implementation of modern digital platforms for recording. It is also important for Ukraine that the large-scale long-term consequences of war crimes against the environment are recognized by the international community. It is obvious that the definition of ecocide in criminal law will not allow Ukraine to obtain reparations from the aggressor country aimed at restoring the Ukrainian state without creating effective international mechanisms to counteract this negative phenomenon, which is global in scale (Marko, 2024). The development of effective mechanisms for bringing to justice those responsible for criminal offenses against the environment, in particular the expansion of international responsibility for environmental damage, as well as the establishment of cooperation in the prosecution of criminals, is an important step towards preserving the environment and ensuring the safety and health of present and future generations.

It is essential to understand that the aggressor country will inevitably be punished for the damage it has caused, including to the environment. Faced with a climate crisis and an era of mass extinction of biodiversity, Ukraine needs to use all available tools, including legislative ones, to achieve global systemic changes aimed at protecting and restoring the ecosystem. Conceptually, it is necessary to intensify efforts to develop a commonly accepted term and legal definition of "ecocide" at the international and European levels, with its possible incorporation into the new European Union directive on criminal law protection of the environment, as well as the development of amendments to the Rome Statute of the ICC to enshrine the relevant elements of the crime among international ones. The implementation of these regulatory and institutional measures has the potential to preventively influence the behavior of parties in future armed conflicts, minimizing opportunities to evade responsibility and strengthening guarantees of compensation for environmental damage in both national and international jurisdictions.

An equally important practical aspect of the investigation is the collection of data and evidence, recording the fact of damage, and securing reliable data on the baseline state of the environment prior to the full-scale invasion and damage. Given the complexity of

proving the case, the transboundary nature of the impacts, and the high resource intensity of monitoring and assessment, it is critical to coordinate and build up expert, technical, organizational, and financial support. One of the main platforms for collecting evidence on the scale of the environmental consequences caused by the war in Ukraine is the official special resource of the Ministry of Environmental Protection, but there are also other tools for collecting relevant data (Environment. People. Law, 2023). Currently, Ukraine is developing internal eligibility criteria for recording claims to the International Register of Damage, which is one of the three elements of the future International Compensation Mechanism, consisting of the International Register of Damage, the International Compensation Fund, and the International Compensation Commission (Turlova, 2017). The deployment of such tools, combined with updated organizational and legal regulations and interagency cooperation, minimizes the risks of evidentiary gaps and increases the likelihood of successful enforcement of environmental damages following court proceedings.

At the national level, it is advisable to introduce a comprehensive system of measures to counteract ecocide by forming a coordinated state policy in the relevant field, institutional strengthening and standardization of environmental monitoring procedures, as well as unification of methods for recording and calculating damages for their further procedural use. The development of an effective, multi-level system for monitoring the state of the environment and centralized data recording creates the conditions for the systematic filing of legal claims for reparations, ensuring an adequate evidence base and correct classification of the damage caused.

The need and importance of improving legislation applies not only to Ukraine and other countries in conflict, but also to the rest of the world. The international community should focus on developing a clear understanding of the rules of law relating to crimes against the environment, taking into account the fact that damage to the environment is predominantly transboundary in nature (Marko, 2024).

International cooperation in environmental crimes is taking new forms through the use of advanced technologies. For example, Interpol has created 4 global law enforcement teams (fisheries, forestry, pollution, and wildlife) to dismantle the criminal networks behind environmental crime (INTERPOL, 2025). The Council of the EU in December 2024 adopted conclusions on combating cross-border environmental crime, calling for the creation of specialized national liaison centers and specialized law enforcement and prosecutorial units (Council of the European Union, 2024). In our opinion, overcoming transnational environmental crime is impossible without rapid automated information exchange and the formation of operational interstate investigative groups in emergency situations.

An innovative mechanism is also the creation of Joint Investigation Teams (JITs) under the auspices of Eurojust to investigate cross-border environmental crimes of an organized nature, which allows for the use of the capabilities of the European Judicial Network (EJN) and accelerates information exchange at the judicial level (Council of the European Union, 2024). The European Public Prosecutor's Office (EPPO) and the European Anti-Fraud Office (OLAF) are also actively involved in combating environmental crime within their competencies, creating a multi-level system for environmental protection at the European level (Pereira, 2024). We consider it expedient

to adapt the best mechanisms of these joint investigative teams for Ukraine's regional services, which will significantly improve the investigation of the analyzed criminal offenses.

Following this example, the Specialized Environmental Prosecutor's Office (the SEP) was established in the structure and staff list of the Office of the Prosecutor General by the Order of the latter (Order No. 185, 2023). The concentration of the relevant functions of the prosecutor's office, provided for in Article 131-1 of the Constitution of Ukraine (Law of Ukraine No. 254k/96-VR, 1996) in the field of the environment creates the organizational and legal basis for the comprehensive and productive activities of the prosecutor's office in this area.

According to the Regulations on the Specialized Environmental Prosecutor's Office, the competence of individual SEP divisions includes the following powers directly and indirectly related to the environmental crime prevention: direct implementation and organizational support of the activities of the prosecutor's office in exercising its powers to represent the interests of the state in the field of environmental protection, waste management, use of natural resources and environmental protection, environmental impact assessment, etc.; monitoring the media to identify violations of environmental protection legislation and initiating representative measures or submitting information to the Unified Register of Pre-trial Investigations, etc.

Therefore, the SEP and its individual departments are vested with a wide range of powers related to combating and preventing environmental crimes during the organization and procedural management of pre-trial investigations, resolving other issues in accordance with the law during criminal proceedings, and supporting public prosecution in criminal proceedings for criminal offenses in the specified area, exercising powers to represent the interests of the state in court, acting as a specially authorized entity in the field of combating corruption outside of criminal proceedings, participating in the consideration of cases of administrative offenses related to corruption in this area by the courts, etc. (Order No. 185, 2023).

According to the Opinion of the Consultative Council of European Prosecutors "On the role of the prosecutor's office in environmental protection", successful environmental protection requires interdisciplinary and interagency cooperation; the environment can be protected more comprehensively if all interested parties representing both the public and private sectors are involved in its protection and the necessary level of cooperation and coordination between them is ensured (Consultative Council of European Prosecutors (CCPE), 2022). Accordingly, the lack of cooperation and coordination between the authorities responsible for enforcing environmental legislation under the coordinating role of the SEP, including in the prevention of criminal offenses against the environment, may adversely affect the entire mechanism for combating crime.

In our view, the main areas for improving specialized criminological prevention of environmental crime under the guidance and coordination of the SEP should include: criminological monitoring; law enforcement; legal education and awareness-raising among the population; and information and analytical support.

Thus, the content of preventing crimes against the environment comprises: analysis of quantitative and qualitative indicators at the macro and micro levels; determination of an appropriate strategy through the prism of regulatory, institutional, and

social aspects; planning and developing areas and levels of prevention aimed at achieving the set goals, including measures to synchronize the actions of various departments under the coordinating role of the prosecutor's office; organizing the accounting of the implementation of agreed organizational, managerial, and technical decisions and planned measures; monitoring implementation, adjusting tasks when quantitative and qualitative indicators, socio-political, economic, demographic, and other conditions of crime change; regulating and adjusting relevant activities; joint analysis and forecasting of environmental crime phenomena by type and geography; identification of new needs, untapped reserves, study and implementation of best practices; developing new promising and operational areas of prevention based on analysis and forecasting.

The role of the ECtHR and international courts in preventing environmental crimes

The European Court of Human Rights (ECtHR), based on an anthropocentric doctrine, has established an institutional practice for reviewing environmental cases, defining the link between human rights violations and environmental damage through the prism of Articles 2 and 8 of the European Convention on Human Rights. It is particularly worth noting that the evolution of the ECtHR's approach from a purely formal interpretation to "living" adaptation of the Convention to contemporary challenges is a key feature. In our view, the Court is shifting from the concept of "State interference" to recognizing its active role in ensuring the environmental well-being of the population. Despite the relative rarity of such cases, the most notable remain "Dubetska and Others v. Ukraine" and "Dzemyuk v. Ukraine", which demonstrated a new model for harmonizing national and international law in the sphere of environmental rights protection.

The case "Dubetska and Others v. Ukraine" (2011) became a precedent in determining State responsibility for omission in resolving environmental problems. According to it, The European Court of Human Rights (ECHR) received complaints from applicants regarding violations of Article 8 of the Convention for the Protection of Human Rights and Fundamental Freedoms (the right to respect for private and family life). They claimed that the state had failed to protect their homes and private lives from excessive environmental pollution caused by the activities of state-owned enterprises. Before the ECHR reached its decision, one of the applicants died.

The European Court found a violation of Article 8 of the Convention because the state had failed to provide reasonable explanations for more than twenty years for its failure to take measures to resettle the applicants or otherwise resolve their situation.

This case, in our opinion, serves as a "litmus test" for all national parliaments developing eco-reforms: it confirms the necessity of a clear and adequate State policy for protection of the population, even if the problem is complex and long-standing one.

Respectively with the second case ("Dzemyuk v. Ukraine") (2014) the applicant lodged a complaint with the ECtHR regarding a violation of Article 8 of the Convention as well. The reason for the complaint was that the construction of a cemetery near his home had led to the contamination of drinking water and water used for gardening. This, in the applicant's opinion, prevented him from using his home and land normally and had a negative impact on the physical and psychological well-being of his family. In addition, the applicant complained about the failure to enforce a final court decision prohibiting

burials on the neighboring plot, referring to Article 6(1) of the Convention, and lodged other complaints.

The European Court found a violation of Article 8, taking into account the following circumstances: the decision of the Tatariv Village Council on the location of the cemetery near the applicant's home was adopted in violation of the applicable law; the sanitary and epidemiological authorities repeatedly, but unsuccessfully, reported the illegality of the cemetery's location and the failure to comply with sanitary and water protection zones (this fact was confirmed at least 6 times by decisions of national courts).

The revolutionary ECtHR Grand Chamber judgment in the case of "Cannavacciuolo and Others v. Italy" (2005) is of particular importance within the subject matter of our research. For the first time in the history of the Court the violation of the right to life under Art. 2 of the ECHR was recognized in connection with the State's failure to address the problem of large-scale environmental pollution. 41 Italian citizens and 5 associations have filed a complaint against Italy with the ECtHR. The reason was the increase in cancer rates and groundwater pollution in the region known as the "Land of Fires". The ECHR condemned Italy, recognizing that "the State had failed to fulfill its obligations, in particular, to develop a comprehensive strategy to address the environmental disaster in the region; to create an independent mechanism for monitoring the situation; and to establish an effective course of action for informing the public. All this was necessary to protect 2.9 million residents from "the consequences of illegal dumping, burial, and incineration of waste by criminal groups".

In its decision, the ECHR emphasized that the Italian state did not act with the necessary diligence and timeliness, despite the fact that it had been aware of the problem for many years. This applies to both the assessment of the situation and the prevention of further pollution and the provision of information to the affected population. At this stage, the Court clearly articulated its function not only as an arbiter of past violations but also as a proactive developer of new policies in the field of environmental security.

Concurrently, the role of ECtHR climate jurisprudence is growing, which is reflected in the landmark Grand Chamber decision in the case of "Verein KlimaSeniorinnen Schweiz and Others v. Switzerland" (2024), in which the Court has handed down a groundbreaking ruling in a climate case brought by a group of elderly Swiss women. The ruling, which marks the first time an influential court has addressed the issue of climate change, highlights the urgency of the intersection between environmental issues and fundamental human rights.

The case revolves around the adverse effects of global warming on the lives, health, and well-being of elderly women in Switzerland. The applicants claimed that the Swiss authorities had failed to take adequate measures to mitigate the effects of climate change, thereby violating their rights under the European Convention. In its judgment, the ECtHR found that there had been a violation of Article 8 of the Convention, which guarantees the right to respect for private and family life. The Court ruled that individuals have the right to effective protection from the serious negative effects of climate change by public authorities.

This decision marks an important legal milestone that sheds light on the profound implications of climate change for the protection of human rights. By holding Switzerland

accountable for its inadequate response to climate change, the ruling highlights the urgent need for decisive climate action and policy measures.

The International Court of Justice made a historic contribution to the development of environmental law by issuing an Advisory Opinion on 23 July 2025 concerning state obligations in the context of climate change, confirming that international law requires states to prevent significant damage to the climate system, and failure to do so may incur international legal responsibility (International Court of Justice, 2025). According to the findings of the UN International Court of Justice, countries have clear and binding obligations regarding climate and the environment. These obligations are enshrined in international climate agreements, human rights law, and customary international law (including obligations to prevent harm and cooperate). States are obliged to reduce emissions, adapt to climate change, and cooperate by sharing technology, finance, and information. The UN Court emphasized that developed countries must be leaders in this area. It is particularly important that nationally determined contributions under the Paris Agreement are recognized as mandatory rules of conduct, and failure to comply with them is considered an international wrongful act. These contributions must be sufficiently ambitious to ensure that global warming does not exceed 1.5°C. This advisory opinion, in our view, became a turning point for solidifying mandatory environmental obligations at the level of international law, making "deferred" or declarative climate obligations impossible.

The UN International Criminal Court has also intensified its attention to environmental crimes. In February 2024, the Prosecutor Karim Khan announced an updated policy on crimes that targeted or caused significant harm to the environment (International Criminal Court, 2024). In September 2024, Vanuatu, Fiji, and Samoa officially proposed to criminalize ecocide in international criminal law, submitting a proposal to amend Art. 5 of the Rome Statute to include ecocide as the 5th core international crime (Sharma, 2025). As evident, such an initiative arises from the intersection of environmental and humanitarian responsibility, elevating violations against the environment to the level of crimes against all humanity.

Under current conditions, Ukraine's initiatives aimed at ensuring international legal responsibility for environmental crimes occurring in the context of armed aggression are of particular significance. A crucial step in this direction was the advocacy mission of the "Ecology-Law-Human" team to The Hague in December 2024. The meeting between the representatives of PAX and EPL, held at the PAX office, centered on the critical issue of defining ecocide within international law. The discussions addressed the legal criteria necessary for a robust definition of ecocide, its application under Article 8(2)(b)(iv) of the Rome Statute, and the challenges of documenting war-driven environmental damage. The participants specifically explored prosecution mechanisms for environmental crimes in wartime and the significant evidentiary hurdles in cases of conflict-related environmental destruction (Environment. People. Law, 2024).

Consequently, Ukrainian human rights defenders are actively cooperating with international experts, particularly with the representatives of the Institute for Environmental Security and the PAX organization on developing legal instruments for environmental protection in wartime and applying Article 8(2)(b)(iv) of the Rome Statute of the International Criminal Court. The practical materialization of such mechanisms, in

our opinion, is undeniable proof of the increasing number of lawyers – academics and advocates – in shaping the global eco-legal order.

The transformation of international judicial practice reveals a decisive shift from an anthropocentric worldview to one that recognizes the intrinsic legal value of the environment. This evolution is exemplified by the International Court of Justice's 2025 advisory opinion, which established states' climate protection obligations as *erga omnes* (Schaugg & Jones, 2025). By affirming a universal legal interest in environmental preservation, this opinion provides a legal basis for universal jurisdiction in environmental crime cases and creates new avenues for holding states and corporations accountable for large-scale ecological harm. This development marks a historic step toward framing environmental crimes as a global threat to the collective interests of humanity.

Furthermore, contemporary international jurisprudence is expanding environmental protection by integrating ecological standards directly into the human rights framework. Courts increasingly affirm that the right to a healthy environment is an inalienable component of fundamental human rights, obligating states to take proactive protective measures. This trend is likely to form the basis for next-generation international conventions on environmental protection and sustainable development in the coming years.

Finally, this evolving international case law sets a powerful precedent for national courts. Domestic judiciaries are increasingly referencing ECtHR and ICJ decisions in their own environmental rulings, fostering a global network of interconnected environmental justice. This synergy promotes the harmonization of legal standards and strengthens the fight against transnational environmental crime through coordinated judicial action. The continued development of these standards is, we believe, a prerequisite for legally guaranteeing the human right to a safe, clean, and favorable environment in the 21st century.

4. Conclusion

A review of international efforts to combat environmental crimes reveals that an effective response requires a comprehensive, interdisciplinary policy that extends beyond criminal law to include technological, social, and economic solutions. As environmental crime becomes increasingly sophisticated and transnational, a coordinated approach among law enforcement, the judiciary, environmental agencies, and the scientific community is imperative.

The international legal framework is evolving to meet this challenge, with a clear trend toward stronger enforcement, harmonized standards, and more detailed procedures for sanctions and damage assessment. Indeed, environmental justice can only be achieved if the state guarantees an adequate protection against environmental hazards (risks) and equal access to environmental decision-making. The principle of environmental justice is based on the state's obligation to ensure equal access to a safe environment, which demands the introduction of three key steps to achieve this goal. Firstly, the establishment of environmental rule of law at the global level should be accelerated in order to oblige states and businesses to respect the human right to a safe environment. Secondly, a robust national legal framework must be established to promote the equitable management of

natural resources. Thirdly, it is essential to ensure effective access to environmental justice institutions.

The introduction of "ecocide" into national and international law (at the EU and UN levels) demonstrates a global consensus to hold perpetrators of large-scale environmental harm accountable. The impact of these legal reforms is magnified by institutional innovations, such as digital platforms and specialized investigative teams, which thrive on international coordination and information sharing.

In the Ukrainian context, key priorities include refining procedures for documenting and assessing environmental damage in wartime, implementing specialized methodologies, and fast-tracking relevant legislation. Developing robust international cooperation to secure compensation and reparations is also critical. The effective protection of national environmental interests ultimately depends on a systemic approach that integrates leading global practices, leverages technological innovations, and raises legal awareness to preserve the environment for current and future generations.

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