



# **A New Study of the Criminalization of Ecocide in International Criminal Law: Challenges, New Developments, and National Legislative Requirements**

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## **Abstract**

Global warming, widespread deforestation, marine pollution, and biodiversity loss in recent decades have shifted global concern about ecocide from the realm of ethics and the environment to the realm of international criminal law. The criminalization of ecocide is not only an effort to preserve the planet but also represents a redefinition of the relationship between humans and nature. Based on ethical, legal, and environmental foundations, this article reviews the historical course of the criminalization of ecocide, analyzes new developments in European and international legislation (2023–2025), examines implementation challenges, and provides appropriate solutions for integrating this concept into the national and international legal system. The ultimate goal of this research is to outline a framework for the effective implementation of this crime at the international and national levels to ensure that the greatest environmental threats will face the most severe criminal responses.

**Keywords:** Ecocide, international criminal law, environmental justice, independent environmental convention, International Criminal Court, national legislation.

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## **1. Introduction**

The world is facing an unprecedented environmental crisis. Climate change, identified by the Intergovernmental Panel on Climate Change (IPCC) as the greatest existential threat to human civilization, is no longer a scientific prediction but an everyday reality. From the rapid deforestation of the Amazon and the destruction of mangrove forests in Southeast Asia to the widespread oil spill in international waters and the extinction of species at an unprecedented rate, the effects of environmental degradation are no longer confined to national borders. These crises have revealed a new pattern of global crimes that go beyond the political interests of states and threaten the very existence of the planet and future generations. In response to these threats, the concept of ecocide has been considered as an international crime, following genocide, crimes against humanity and war crimes. The criminalization of ecocide is an attempt to criminalize those acts that cause widespread and irreparable damage to the environment. This concept, which has its roots in the struggles of environmental activists in the 1970s, is now on the verge of entering the international legal system and requires an in-depth analysis of its theoretical foundations and operational challenges.

Aiming to analyze new developments in the criminalization of ecocide, this article will examine the challenges of judicial proof, political obstacles, and national and international legislative solutions, and provide a framework for integrating this crime into international criminal law.

## **2. The Concept and Foundations of Ecocide Criminology**

### **.1.2 Etymology and Evolution of Definitions**

The word ecocide is derived from the words *eco*, meaning home or environment, and *cide*, meaning killing. It was first used by Professor Arthur Galston in the 1970s to describe the environmental destruction caused by the Vietnam War (particularly the use of Agent Orange).

The original definition of ecocide focused on the widespread destruction or severe damage to ecosystems. One of the most famous definitions is that provided by Paulie Higgins, who defines ecocide as: "the widespread damage, destruction or loss of the ecosystems of a given territory, whether by human agents or other causes, to such an extent as to seriously impair the peaceful enjoyment of the inhabitants of that territory" (Higgins et al 2014:4). However, to become an international crime, the definition must be precise, enforceable and distinct from national environmental crimes.

A definition developed by an independent panel of experts in 2021 under the auspices of the Stop Ecocide Foundation defines ecocide as a set of human actions that are either inherently unlawful or recklessly and recklessly, meaning that the perpetrator continues to carry out the action despite knowing that severe harm will occur. These actions fall within the scope of ecocide when their consequences result in serious environmental degradation; degradation that can be widespread, persist for long periods of time, or reach a level of severity that disrupts essential ecosystem functions. In this framework, the environment is considered not simply as an economic resource, but as a complex and interconnected system, where damage to any of its components can have cascading and irreparable consequences. This definition also implicitly emphasizes the risk of extinction of plant and animal species and the destructive effects on biodiversity, since the destruction of habitats, widespread pollution and the degradation of natural resources can disrupt the ecological balance and seriously threaten the survival of species. From this perspective, ecocide is not simply a simple environmental offense, but rather a behavior that, with the knowledge of its catastrophic consequences, endangers the foundations of natural life in a region or even on a planetary scale, and for this reason is considered to be of particular importance in international criminal law.

### **2.2. The Place of Ecocide in the Structure of International Crimes**

Efforts are being made to have ecocide recognized as the fifth substantive crime in the Rome Statute (ICC Statute). This crime is complementary to other crimes; While Article 8 of the Rome Statute deals with environmental destruction in times of armed conflict (according to this paragraph: "The intentional commission of an attack, with the knowledge that such attack will cause loss of life or injury to civilians or damage to civilian objects or widespread, long-term and severe damage to the environment in time of war, if excessive in relation to the anticipated military advantage, is a war crime (Shari'at Baqeri, 11-12:1390)), ecocide focuses on intentional and widespread destruction in times of peace. National environmental crimes usually focus on violations of specific local laws (such as pollution beyond permitted limits). However, ecocide, due to its scale and destructive nature, directly targets governments or high-ranking leaders who adopt policies that lead to widespread environmental destruction. This takes ecocide out of the realm of administrative-penal law and into the realm of international criminal law.

### **3.2. Proof Requirements in the New Definition**

To establish and prove ecocide, it is necessary to identify and prove a set of essential elements simultaneously, which together form the framework of criminal liability. First, the existence of an external behavior attributable to the perpetrator is important; behavior that has been realized in the real world and has led to serious damage to the environment. This behavior can take various forms, including widespread and severe pollution of air, water or soil, extensive destruction of forests and natural habitats, excessive

exploitation of natural resources or the creation of profound and destructive changes in natural cycles such as the hydrological cycle that disrupt the balance of ecosystems. In the next step, the scope and scale of this damage are considered; in such a way that the damage caused must exceed the level of a limited damage or cover a wide geographical area and affect several ecosystems or different biological populations, or be so persistent that its effects may last for decades or even centuries and natural restoration or reconstruction is not easily possible. Another important element is the state of mind of the perpetrator at the time of the act, which is central to the definition provided by the independent expert panel; in this framework, there is no need to prove direct intent to destroy the environment, but it is sufficient to establish that the perpetrator was aware of the high probability of severe, widespread or long-term damage and, despite this awareness, carried out his action, or at least acted with reckless disregard and disregard for the harmful consequences of his behavior. This approach expands the scope of criminal liability and allows for the prosecution of behaviors that, although not intended to cause destruction, had foreseeable catastrophic environmental consequences. Finally, there must be a clear and demonstrable relationship between the perpetrator's behavior and the environmental damage caused, such that it can be shown that the damage caused is a direct result of, or at least attributable to, that specific act and not the result of independent or unrelated. Establishing this causal relationship plays a fundamental role in attributing responsibility and ensures that ecocide is not established solely on the basis of the occurrence of damage, without a clear link to specific human behavior. 4.2. Using the capacity of criminalization as a last resort

One of the fundamental principles in criminal law is the principle of minimum application of criminal law or minimal criminalization, according to which resorting to criminal law and criminalizing an act is only permitted when the possibility of using other solutions and guarantees of execution, such as civil, administrative or political guarantees of execution, is not available, and criminalization is the last solution and final remedy. In other words, the scope of criminalization should be limited to cases where the vital and fundamental interests of citizens and society have been harmed and there is no other way to protect it except through criminalization. (Pourbafarani, 2013:29)

In simple terms, the principle of last resort means that criminalization and punishment are the last weapon and should only be resorted to if other measures and guarantees of execution are necessary and ineffective. (Nobhar, 2011:91)

In other words, the principle of the last resort states that in the face of social anomalies, criminalization should be considered the last resort and solution. According to this principle, the use of punishments is like an evil that should only be used as a last resort and in case of necessity. Therefore, if the intended goals are achieved in a way other than the use of punishment, those solutions should still be used instead of punishment. (Haji Dehabadi, 2019:110) Some who believe in the theory of economy in the application of punishment believe that the principle should be that no punishment should be applied at all, except when it is necessary to use punishment exceptionally to ensure criminal justice and deterrence, or when the use of punishment is absolutely necessary to deprive people who are considered a continuous threat to society of their ability to commit crimes. (Braithwaite, 1990:125)

The use of executive guarantees, as well as criminal law, will not only undermine the authority of criminal law, but will also be ineffective in instilling the values intended by the legislator in society. (Haji Dehabadi and Salimi, 2014:67) Therefore, the normative functions of punishment should be set aside, because it is not possible to accept both the minimal use of punishment and norm-setting.

Some also believe that the principle of last resort is part of the theory of criminology and not part of the theory of punishment, and this difference is very important. We may believe that the decision to punish a particular defendant should be a function of his specific circumstances and circumstances. We may have reasons based on which we believe that we will effectively achieve our goals by warning him. Or perhaps we have come to believe that he will ignore our warning, so punishment will be necessary to achieve our goals. It is observed that punishment should only be imposed on the accused as a last resort. This way of understanding the meaning of the principle of last resort is an acceptable way and can help reduce the

imposition of excessive punishments. (Hosak, 2014:138) 3. Theoretical and ethical foundations of ecocide criminalization

Ecocide criminalization is not simply a legal technical measure, but a reflection of a transformation in our understanding of the fundamental values of planet Earth.

### **1.3. Earth as victim and common heritage**

From an ethical perspective, ecocide criminalization is a response to the crisis of human conscience. This concept is based on the idea that nature and ecosystems have intrinsic value and are not simply resources for human exploitation. Article 8 of the Statute is also regulated with a biocentric approach and the natural environment is independently protected by criminal law, which expresses the intrinsic value of nature and, better stated, the ultimate goal of the path that environmental law seeks (Lopez, 2006:232). A healthy Earth and environment are considered a common heritage of humanity, similar to outer space or the depths of the sea.

In the twentieth century, the international community has always sought a solution to protect the environment and prevent environmental degradation. In fact, the countries of the world realized that environmental problems and dilemmas in any part of the world could have different consequences in other parts of the world in the near future. Therefore, it has become quite clear that the common destiny of humanity is interdependent and that one cannot be indifferent to environmental damage and destruction such as deforestation, water, air, soil pollution, etc. These concerns about environmental issues led to the holding of the first World Environment Conference in Stockholm, Sweden in 1972. Following this conference, the United Nations Environment Programme was formed by the United Nations as an organ to regulate and coordinate the efforts of the United Nations in preserving the environment. In fact, with the formation of the aforementioned conference, the process of developing international environmental law and environmental protection gained more speed, and numerous international documents in the field of environmental protection and prevention of environmental damage were adopted in both binding and non-binding forms. Many of the rules mentioned in these documents were accepted by the international community as customary rules and ombudsman rules, and principles and concepts such as the principle of cooperation, the precautionary principle, the polluter pays principle, the principle of the environment as the common heritage of humanity, the concept of sustainable development, etc. were proposed by the international community and implemented as solutions to prevent environmental damage.

Today, in some documents, the concept of environmental criminalization was proposed to combat environmental damage. Therefore, the international community is seeking to adopt stricter laws to combat environmental destruction every day, and this is actually a positive prospect in the process of forming environmental criminalization at the international level. (Jam Bozorg and Pornuri, 2019:275) 2.3. Link to human rights and environmental justice

The criminalization of ecocide is directly linked to “fundamental human rights”, in particular the right to life and the right to enjoy a healthy environment, which are guaranteed in many national and international human rights instruments (although explicitly in the Rome Statute).

Ecocide involves violations of the rights of future generations. Actions taken today, if they lead to sustainable degradation, deny future generations the right to a healthy environment. This approach is fully consistent with the principle of sustainable development.

### **3.3. Common but differentiated responsibilities**

Within the framework of international environmental law, the CBDR principle states that while all states have a responsibility to protect the environment, the primary responsibility (and financial and technical capacity) lies with developed countries that have historically contributed the most to pollution and degradation. In the field of ecocide, this principle becomes important because the largest destructive projects are often carried out by companies based in developed countries or with their financial support.

### **4.3. Getting rid of impunity in ecocide**

The discussion of impunity in international criminal law is particularly due to the lack of enforcement guarantees in this legal system. Cases that are recognized as crimes and crimes and are considered to require criminal response are very few compared to cases of violations of international obligations and regulations. Whenever the phenomenon of impunity is discussed, the principle is that the act that was carried out violated legal regulations and the law has foreseen a criminal penalty for its perpetrator. In order for a person to be punished, his criminal responsibility must first be established. (Sobhani, 2008:22)

In a simple sense, in legal language, impunity means not being punished for someone who has committed a crime. From the perspective of international criminal law, which in some cases considers human rights violations to be criminally responsible, impunity means that perpetrators of human rights violations escape any investigation, prosecution, arrest, and trial and do not receive punishment commensurate with their inhumane behavior. (Paulussen, 2012:22)

In the past, the idea of fighting for justice by punishing criminals sometimes emerged, but the fight against impunity, in the sense mentioned, has now become widespread and continuous and numerous efforts have been made to bring criminals to justice, as, following the developments of the past decade or two, this fight is considered one of the main factors in establishing the rule of law and guaranteeing common human values. There are numerous Security Council resolutions on various issues and topics in which the concept of combating impunity has been used, some recent decisions of the International Court of Justice, which in its own way has determined the necessity of this fight, as well as the performance of international and national judicial authorities in trying criminals, are evidence of understanding the importance and necessity of this fight for the implementation of justice at the international level. Although the phenomenon of impunity in international criminal law is different in terms of examples, causes and factors, its concept is the same. In concept, impunity is the immunity of a person who violates criminal laws from bearing the guarantee of execution foreseen for that act. (Namamian and Tayyibi, 2012:39)

In the international criminal law system, in addition to some of the above examples that are discussed, other causes and factors are also noticeable. For example, by referring to the articles of the Statute of the International Criminal Court, the lack of definition of the crime of aggression or the lack of a collective agreement on the definition and identification of this crime is observed.

Article 98 of the Statute of the International Criminal Court, especially as interpreted by American authors, allows for cases of international crimes not to be brought before the Court and, as a result, impunity is officially approved. Cases of non-cooperation by states, which are even mentioned in the text of the Statute, are current at the international level, which prevents the prosecution, trial and punishment of international criminals and criminals. The question that comes to mind is that given the declaration of international will in the preamble to the Statute of the International Criminal Court and before that in the United Nations since 1950, regarding the necessity of prosecuting, trying and punishing perpetrators of international crimes and the end of immunities and the obligation of states in this fight, how is it possible for impunity to exist to such a large extent in international criminal law and at the level of the international system? This question can be answered as follows: impunity in international law is mostly due to the nature of the scope of rights in the international system. This legal system, as mentioned, is different from the domestic legal system. (Azmayesh, 20:2008)

However, currently, an approach has emerged in regional organizations that also create executive tools for themselves. Even the Gulf Cooperation Council has thought about creating an executive arm, so transferring responsibility from the United Nations to regional organizations is a good move, but on the condition that that regional organization, with its own executive facilities and tools, can implement the decisions of the Security Council in that region, especially regarding terrorism. Today, there is no doubt that the intensification of terrorist behaviors and crimes and the backwardness of the international and regional communities in responding to this ominous phenomenon, especially in the Middle East, have created an association of a kind of insoluble impunity in the field of confronting and combating terrorism. (Razavi Fard and Namamian, 40:1394)

It is obvious that criminalization in the field of environmental crimes and ecocide will include a very important advantage, namely preventing impunity in ecocide. From this perspective, it can be said that criminalization and punishment for ecocide will at least have the benefit that perpetrators of such crimes will not go unpunished, will not escape punishment, or, due to the lack of laws and criminalization, their punishment will not be reduced by similar criminal titles

#### **. 4. Historical Course and International Development of the Crime of Ecocide**

The path of ecocide's entry into international criminal law has been a long and winding one.

##### **1.4. Backgrounds in the International Criminal Court (ICC)**

The attempt to criminalize ecocide at the international level dates back to 1996, when the draft Rome Statute included an article on widespread environmental destruction. The drafters of the Statute did not address the criminalization of crimes against the environment, and no crime entitled ecocide or crimes against the environment was criminalized in it (Fahimi et al., 2014). As a result, ecocide has not yet been recognized as a separate crime in the Rome Statute. Finally, Article 8(2)(b)(iv) of the Rome Statute criminalizes widespread, unlawful and intentional destruction of the environment within the framework of war crimes (during non-international and international armed conflicts).

The weakness of this article is its limitation to wartime, while the greatest environmental damage (such as global warming caused by carbon emissions) occurs in peacetime. This highlighted the need for a separate crime in peacetime.

##### **2.4. Legislative developments at the national and regional levels (2020-2024)**

In the wake of the intensification and spread of the effects of climate change at the global level, a new wave of political and legal support for the criminalization of ecocide has emerged, which has gradually gone beyond the level of academic discourse and entered the arena of official decision-making by governments and international institutions. In the meantime, some governments have taken the lead and have tried to highlight the gap in the international criminal law system by explicitly proposing the need to recognize ecocide as an international crime. A prominent example of this approach is the government of Vanuatu, which in 2019, given its extreme vulnerability to climate change, officially requested the inclusion of the crime of ecocide under the jurisdiction of the International Criminal Court and called on the United Nations General Assembly to initiate the necessary legal process in this regard. Although this action alone did not lead to an immediate change in the Rome Statute, it played an important role in giving political legitimacy to the idea of ecocide and attracting the attention of other governments and global public opinion, and paved the way for similar initiatives at the regional and national levels.

In this regard, the European Union, as one of the influential legal actors, has also taken an important step towards institutionalizing this concept. The amendment of the EU Environmental Crime Directive in 2023 is a milestone in this direction, as for the first time ecocide or behaviors with a similar nature and effects have been recognized as serious environmental crimes. Although the implementation of this crime ultimately takes place within the framework of the domestic criminal systems of the member states, the definitions and criteria provided by the European Union - which are largely influenced by the concepts and approaches of the independent expert panel in defining ecocide - play a decisive role in international convergence and standardization. These reforms will not only increase penalties for serious environmental crimes, but will also deepen judicial and criminal cooperation between Member States, sending a clear message to state and economic actors that widespread or long-term environmental degradation is no longer considered a mere administrative or civil offence, but can be considered one of the most serious criminal offences. Taken together, these developments demonstrate that ecocide is gradually evolving from a moral and scientific demand to a legally binding concept at the regional and international levels.

##### **3.4. The way forward: amending the Rome Statute**

The main path forward for criminalizing ecocide in international law is to add it to the jurisdiction of the International Criminal Court (ICC) in peacetime. This would require ratification by the Assembly of Member States.

It is proposed that a new article (e.g., Article 5) be added to the Statute to establish the Court's jurisdiction to deal with ecocide in peacetime. This would require proof that ecocide is an "international crime" that threatens international peace and security.

## **5. Legal and Implementation Challenges in Criminalizing Ecocide**

Despite the moral consensus on the need for criminalization, several operational and legal obstacles make it difficult to effectively enforce ecocide.

### **1.5. Judicial proof and scientific complexities**

The biggest challenge in any ecocide case is to prove three main elements:

a) Accurately determining the scale and damage: How can the line between "serious environmental damage" (which is subject to national law) and "widespread or long-term damage" (which is considered ecocide) be drawn? This requires advanced scientific modeling, especially in the context of climate change and indirect effects (such as changes in carbon sequestration or ocean acidification).

b) Proving the causal relationship: In large industrial projects (e.g. the construction of a large dam or multinational mining operation), determining which specific action and which manager exactly led to widespread destruction is extremely difficult due to the many natural and human variables involved. Quantitative analyses must be able to substantiate this relationship statistically or scientifically. For example, if carbon emissions indirectly cause the melting of polar ice caps, it must be proven that the defendant's actions directly accelerated this process.

c) The psychological element: Proving "science" or "recklessness" at the leadership level of a multinational corporation is complex. Does repeatedly ignoring internal environmental warnings constitute recklessness? The challenge is that, unlike genocide, which is usually overtly intentional, in ecocide the primary intention may be financial gain, with environmental degradation seen as a "foreseeable" side effect.

### **2.5. Political and economic obstacles**

The criminalization of ecocide directly conflicts with the vast and entrenched financial interests of industries such as energy, mining, and industrial agriculture, on which a significant portion of the global economy and government revenues depend, and any serious criminal restrictions on their activities could mean increased costs, changes in production patterns, and even a rethinking of economic development models. For this reason, many developed states, whose economic structure is based on the extraction of natural resources, heavy industry, and extensive energy consumption, take a cautious or even resistant approach to accepting international criminal obligations in the field of ecocide. These states are often concerned that criminalizing ecocide will require costly structural reforms, limit the competitiveness of national companies in the global market, and increase the criminal liability of officials and economic actors, which could have significant domestic political and economic consequences.

In addition to these political and economic considerations, the institutional and legal limitations of the International Criminal Court are also a significant obstacle to prosecuting ecocide. The jurisdiction of the Court is designed on the principle of complementarity, meaning that, according to Article 17 of the Rome Statute, the Court will only intervene when the State concerned does not have the will or is fundamentally unable to investigate and prosecute, or when the State has expressly transferred jurisdiction to the Court. Furthermore, the Court's judicial procedure is based on strict selection criteria and fair trial principles, and each case requires passing through several legal filters. The Court must first establish its subject-matter, temporal and territorial jurisdiction, and then, in a subsequent stage, assess secondary criteria such as the gravity and seriousness of the crime, its international significance, and the interests of justice. Since the Court only deals with crimes that are of the highest international importance in terms of seriousness,

proving that specific environmentally destructive acts are of this degree of seriousness poses an additional challenge. Furthermore, effective prosecution of ecocide in practice requires the active cooperation of States in referring cases, presenting evidence and implementing the Court's decisions; whereas such cooperation is less likely to occur where national interests, energy security or the macro-economic interests of States are at stake. Taken together, these factors suggest that the path to the effective criminalization and enforcement of ecocide faces, in addition to conceptual and legal challenges, serious political, economic and institutional obstacles that require concerted international will and a profound redefinition of the concept of development and the responsibility of States towards the environment.

### **3.5. Institutional Challenge: Need for Judicial Expertise**

The handling of ecocide cases requires in-depth expertise in the fields of biology, geology, and climate science. Judges of the International Criminal Court or national courts lack this expertise. This highlights the need for the establishment of specialized courts. The World Environmental Court Proposal has been proposed in relation to ecocide criminology. The aim is to establish an independent international judicial body with judges specializing in this field to deal with environmental crimes, including ecocide. Because the International Criminal Court currently has limited jurisdiction in this area, and the crime of ecocide is not formally recognized as an independent crime in the Rome Statute, the World Environmental Court could, as an independent specialized body, deal with environmental crimes and provide more effective protection of the environment at the international level through the criminalization of ecocide.

## **6. Legislative and institutional solutions to advance the criminalization of ecocide**

To overcome the above challenges and fully activate the potential of ecocide as a criminal justice tool, a series of actions at the national, regional and international levels are necessary.

### **1.6. Amending the Rome Statute and expanding the jurisdiction of the Court**

The most fundamental and decisive step towards recognizing ecocide as an international crime is to amend the Rome Statute to include this conduct among the crimes under the jurisdiction of the International Criminal Court, even in peacetime. Such an amendment would require that ecocide be explicitly defined in Article 5 of the Statute, alongside the crimes of genocide, crimes against humanity, war crimes and the crime of aggression, as one of the core crimes of the Court; a move that would symbolically and legally establish the place of severe environmental destruction at the highest level of international crimes and send a clear message about the importance of protecting the foundations of human and natural life. Alongside this conceptual shift, it is particularly important to consider the role of legal entities and organizational structures in the occurrence of widespread environmental degradation, since the majority of the most severe damage is not the result of individual decisions, but rather the result of the macro-policies and strategies of large and transnational corporations.

Therefore, it is essential to foresee mechanisms that allow for the attribution of criminal liability to senior managers, board members, or key decision-makers of companies that have knowingly designed and implemented environmentally destructive policies and practices. This approach, although still relying on the principle of individual responsibility in international criminal law, moves beyond a purely individual-centered perspective to identify a type of organizational or structural responsibility that better reflects the economic and managerial realities of the contemporary world. Furthermore, to maintain the Court's efficiency and prevent a backlog of minor cases, it is necessary to set a minimum threshold for ecocide, so that only the most severe and serious cases of environmental degradation fall within the Court's jurisdiction. This threshold could be defined on the basis of objective and measurable criteria, such as the amount of damage to regional GDP, the geographical extent of the degradation, the duration of the harmful effects, or scientific and biogeochemical indicators related to the disruption of ecosystems. Setting such criteria would not only contribute to legal transparency and predictability, but would also ensure that the ICC focuses on cases that truly represent the highest degree of importance and risk to the international community and the global environment.

### **2.6. Drafting a Standalone International Environmental Convention**



The mere inclusion of ecocide in the Rome Statute, although an important and symbolic step towards the international recognition of this crime, cannot alone cover all the complex aspects of severe environmental degradation and respond to the practical needs of the international community. In this regard, the drafting of a standalone environmental convention or a global treaty specifically on ecocide could create a more comprehensive and efficient framework that does not focus solely on criminal response after the damage has occurred, but rather focuses primarily on prevention, deterrence and compensation. Such a convention could require governments and economic actors to conduct detailed environmental assessments, take effective precautionary measures and, in the event of damage, activate mechanisms for compensation and restoration of the environment, before reaching the threshold of criminal liability; this would greatly contribute to reducing the likelihood of ecocide and strengthening ex ante accountability.

In addition to this preventive approach, the establishment of a specialized judicial institution called the International Court of Justice could fill the gap in the specialized and rapid handling of serious environmental claims. This court, by utilizing judges who, in addition to knowledge of international law, have scientific expertise in the fields of environment, ecology, and earth sciences, will be able to examine complex ecocide cases with greater accuracy and efficiency. The design of the structure and jurisdiction of this institution could draw inspiration from the experiences of the International Court of Justice and the International Criminal Court, but at the same time, by focusing exclusively on environmental issues, make the proceedings shorter, more technical, and proportionate to the scientific nature of the evidence. In addition, the existence of such a court could gradually lead to the development of specialized judicial practice in the field of international environment and help create uniformity of procedure and legal predictability. On the other hand, one of the fundamental challenges in prosecuting ecocide is the complexity and technical nature of the evidence; A stand-alone convention could therefore regulate the process of collecting, recording and preserving environmental evidence by providing standard international frameworks and protocols. These protocols could include the systematic use of satellite data to monitor degradation, information from environmental sensors to measure pollution and ecosystem changes, and financial and corporate audit data to demonstrate the link between economic decisions and environmental consequences. Standardizing these processes would not only help to increase the credibility and reliability of evidence in judicial proceedings, but would also enable more effective cooperation between governments, international institutions and scientific organizations. Overall, such a convention could create a more coherent and effective system for combating ecocide at the global level by combining preventive, judicial and technical approaches.

### **3.6. National implementation and localisation of laws**

Without real commitment and will at the national level, any criminalisation of ecocide in the international arena will effectively lose its effective function and become a purely symbolic institution. The actual realisation of this crime requires that countries absorb and institutionalise internationally accepted definitions and concepts in their domestic legal systems, so that there is coordination and coherence between the definition of ecocide in international instruments, in particular the definition provided by the independent expert panel or the final definition accepted by the International Criminal Court, and domestic criminal regulations. Such coordination not only prevents legal conflicts, but also enables the exercise of local jurisdiction and the effective prosecution of perpetrators within countries and reinforces the role of the principle of complementarity in practice.

In this context, strengthening and reviewing domestic laws is of particular importance; Especially in countries like Iran, where the provisions related to environmental destruction in the Islamic Penal Code or specific environmental laws are scattered and mostly limited to traditional instances and local damages. These provisions need to be redefined and updated based on the criteria of ecocide, including attention to the scale of damage, geographical extent or permanence of the effects of destruction, as well as taking into account the psychological element of indifference that extends criminal liability to cases beyond direct intent. Such reforms could lead to the establishment of effective domestic jurisdiction to prosecute acts that have the characteristics of ecocide and, as a result, reduce complete dependence on international mechanisms. Along with legislative reforms, ensuring the independence and efficiency of environmental

investigation and monitoring institutions plays a decisive role in the actual enforcement of this crime. The establishment or strengthening of environmental inspection institutions with sufficient powers to access information, conduct technical and financial investigations, and monitor the activities of large companies is a fundamental condition for the discovery and prosecution of severe environmental destruction. These institutions should have organizational and financial independence so that they can carry out their duties without political or economic pressure, especially in cases where there is a possibility of collusion between powerful economic entities and state institutions. In sum, it is only by combining national commitment, reforming domestic legislation and strengthening independent oversight institutions that the criminalization of ecocide can go beyond the level of international instruments and become an effective tool for real environmental protection.

#### **4.6. Strengthening transnational cooperation and capacity building**

Ecocide crimes are inherently transnational. Therefore, judicial cooperation in the field of extradition of suspects, transfer of convicted persons and sharing of technical knowledge is crucial. Developing countries need technical assistance from international organizations to develop Damage Assessment Models.

#### **Conclusion**

The criminalization of ecocide is a manifestation of human moral and legal responsibility in the era of climate crisis and the sixth extinction. It is an essential response to fill the gap in international criminal law, where crimes against the human habitat in peacetime have so far remained unpunished. Recent developments, in particular the efforts of the European Union and the updated definition by the IEP, demonstrate the political and legal maturity necessary to accept ecocide. However, moving from this point to effective implementation requires overcoming deep political obstacles and the technical complexities of judicial proof. Strengthening international cooperation, reforming the Rome Statute, and, most importantly, requiring States to accept criminal responsibility for acts that threaten shared habitats, will pave the way for the realization of environmental justice in international criminal law. This will not only ensure the protection of the planet, but will also bring about a fundamental redefinition of our civilization's relationship with nature, from a property-based to a respectful one. In other words, the new examination of the criminalization of ecocide in international criminal law essentially shows that the global community is on the verge of a profound conceptual and normative transformation; one in which environmental protection will go beyond the level of moral obligations, soft policies and civil responsibilities and enter the realm of the most severe forms of international criminal responsibility. The intensification of environmental crises, climate change, the loss of biodiversity and the widespread destruction of ecosystems have exposed the ineffectiveness of traditional mechanisms of international environmental law and highlighted the need for more decisive instruments, including international criminal law, as a last resort. In this context, the concept of ecocide is presented as a bridge between environmental science, global ethics and criminal law, and attempts to classify severe, widespread or long-term environmental degradation as crimes that offend the common conscience of humanity. Recent developments, including the definition provided by the Independent Expert Panel in 2021, the EU's reforms of environmental crime and the growing support of some states, particularly those vulnerable to climate change, indicate a gradual but significant move towards the recognition of ecocide as an international crime. However, this path is accompanied by serious political, economic and legal challenges. The vested interests of the energy, mining and industrial agribusiness industries, the resistance of developed states to costly structural commitments, and the institutional limitations of the International Criminal Court, including the principle of complementarity, the selective criterion of seriousness of the crime, and the practical dependence of the Court on the cooperation of States, all indicate that simply adding ecocide to the Rome Statute, while necessary, will not be sufficient on its own.

Therefore, the idea of developing a stand-alone environmental convention or global ecocide treaty as a complement to the international criminal system assumes particular importance. Such a framework could play an effective role in reducing severe environmental damage before the threshold of criminal liability is reached, by focusing on prevention, deterrence and reparation, while at the same time filling existing

technical and institutional gaps by providing for specialized institutions such as the International Court of Justice and standard mechanisms for collecting scientific and financial evidence. Combining a criminal approach with scientific and preventive mechanisms allows the international law response to ecocide to be not merely reactive and retrospective, but proactive and forward-looking. At the same time, the experience of international criminal law clearly shows that without commitment and effective implementation at the national level, any international criminalization risks remaining sterile. Harmonizing domestic definitions with international standards, reviewing criminal and environmental laws to take into account the scale of damage and the psychological element of impartiality, and ensuring the independence of research and monitoring institutions are essential requirements for the real realization of ecocide in practice. In countries like Iran, this requires moving beyond the traditional approach limited to local destruction and adopting a broader and structural view of environmental damage; a view that can also include organized activities and destructive policies of large corporations within the scope of criminal liability. The criminalization of ecocide should not be seen as a mere technical legal argument, but rather as part of a redefinition of the concept of development, responsibility and justice in the 21st century. The adoption of this crime indicates that the international community recognizes the environment as one of the fundamental values of humanity and considers its severe destruction as the most serious crimes against humanity and its future. The success of this legal project depends on the synergy of political will of States, the development of binding international norms and profound reforms in domestic legal systems; a difficult but necessary path to ensure survival, intergenerational justice and the protection of the foundations of life on a global scale.

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