

The Role of Civil Liability in Redressing Environmental Pollution Damage

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Received : 12/08/2024 ; **Accepted :** 27/12/2024 ; **Published :** 05/02/2025

Abstract :

Liability in the environmental field holds significant importance, having undergone substantial development and taken various forms at both the national and international levels. This evolution is a result of the escalating environmental damages, which have assumed new forms previously unknown.

Accordingly, this study sheds light on the legal framework governing civil liability for environmental damages and the associated sanctions aimed at redressing and compensating such damages.

Keywords: Civil liability, environmental damages, legal framework, compensation.

Introduction

Since the dawn of humanity, human life has been closely linked to the environment in which it exists. The advancement of civilization has been driven by the exploitation of natural resources and energy. In earlier eras, this exploitation was limited, and environmental pollution was virtually nonexistent due to the scarcity of pollutants and the environment's ability to absorb them.

However, with scientific and technological progress infiltrating all aspects of life, the situation has drastically changed. Environmental pollution has emerged as a pressing issue due to the excessive use of natural resources, the massive expansion in energy consumption, the proliferation of transportation means, and the increased industrial production. These factors have resulted in water contamination with chemical toxins and air pollution from smoke and gases. Consequently, the environment can no longer regenerate its natural resources, leading to an imbalance among its various components. The inability of nature to break down human waste and absorb industrial by-products has exacerbated environmental degradation, expanding its scope and severity.

This has made environmental pollution one of the most critical challenges of the modern era, with its harmful effects growing more severe and widespread in recent years. Consequently, global awareness has risen regarding the urgent need to protect and preserve the environment, based on the belief that

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preventive environmental protection is more effective than remedial measures, such as compensating for pollution damage after it occurs.

In response, most countries, including Algeria, have sought to establish legal mechanisms to address this issue and ensure effective environmental protection. These efforts involve preventive and deterrent measures, alongside holding polluters accountable for repairing environmental damage, a concept known as civil liability for environmental harm. This raises the key question: To what extent does civil liability contribute to redressing environmental damage?

In this study, we adopt a descriptive approach to explore key concepts related to the subject and an analytical approach to examine and interpret relevant legal provisions concerning civil liability for environmental damage, particularly in Algerian legislation. Reference to other legal systems will be made when necessary, especially regarding the application of specific mechanisms in Algerian law.

To comprehensively address this issue, the study is structured as follows:

- **First section:** Conceptual framework of the study
- **Second section:** Legal framework of civil liability for environmental damage
- **Third section:** Sanctions related to civil liability for environmental damage

FIRST SECTION: CONCEPTUAL FRAMEWORK OF THE STUDY

This topic is associated with several key concepts and terms that must be defined as an introduction to the study. The primary terms to be examined include "environment," "environmental pollution," and "civil liability."

First: The Concept of Environment

The definition of the environment will be explored from two perspectives: doctrinal definitions (1) and legislative definitions (2).

1- Doctrinal Definition of the Environment

Scholars have provided multiple definitions of the term "environment," most of which describe it in terms of its fundamental components, encompassing both **living and non-living elements, whether natural or artificial.**

- Some define it as: "A set of physical, organic, and inorganic conditions and factors that enable humans and other organisms to survive and persist." ¹
- Others define it as: "The medium connected to human life and health in society, comprising various elements that exist and must be preserved." ²
- Another perspective describes it as: "A set of biotic factors, including visible and invisible organisms in different environmental ecosystems, along with abiotic factors such as water, air, and soil, which directly or indirectly influence living organisms at any stage of their lives." ³

2- Legislative Definition of the Environment

Unlike Law No. 83-03 on the environment, which was repealed by Law No. 03-10⁴, the latter explicitly defines several key environmental concepts and terms, including environment, pollution, water pollution, and air pollution, as stipulated in Article 4⁵.

Similarly, the Egyptian legislator defined the environment in Article 1 of Egyptian Environmental Law No. 04 of 1994, as amended by Law No. 09 of 2009, stating that:

"The environment is the surrounding medium that includes living organisms and their contents, as well as the air, water, and soil around them, along with the structures established by humans."

At the international level, the United Nations Conference on the Human Environment, held in Stockholm in 1972, defined the environment as:

"A set of natural, social, and cultural systems in which humans and other organisms live, from which they derive their sustenance and carry out their activities."⁶

Following this conference, in 1974, the term "sustainable development" was introduced and later widely adopted. This concept became closely associated with environmental protection, as domestic legislations incorporated it as a fundamental pillar for economic, industrial, and technological progress while avoiding environmental harm.

In line with this global trend, the Algerian legislator also linked environmental protection to sustainable development in both Law No. 83-03⁷ (now repealed) and Law No. 03-10. The latter embraces several principles in Article 2, which reconcile environmental protection with national sustainable development by establishing:

- Guidelines for environmental management,
- Improvement of living conditions,
- Prevention of all forms of pollution and environmental damage,
- Promotion of the rational ecological use of available natural resources,
- Adoption of cleaner technologies,
- Strengthening awareness, information dissemination, and public participation in environmental protection measures.

Furthermore, Law No. 03-10 explicitly incorporates sustainable development as a key principle⁸ and enforces it through the enactment of various laws and decrees aimed at its practical implementation⁹.

Second: The Concept of Environmental Pollution

This section examines the definition of environmental pollution from two perspectives: the doctrinal definition (1) and the legal definition (2).

1- Doctrinal Definition of Environmental Pollution

Similar to the term *environment*, the concept of *environmental pollution* has been defined in various ways by scholars. However, most definitions share a common emphasis on human activity as the primary cause of pollution, whether directly or indirectly.

- Some define it as: "The presence of any substance or energy in the natural environment in an abnormal quality, quantity, location, or time, causing harm to living organisms, humans, their security, health, or well-being, and disrupting the natural balance among environmental components." ¹⁰
- Another definition describes it as: "An adverse alteration in the natural, chemical, and biological components of the environment, leading to an ecological imbalance that negatively affects human life. It may also refer to a quantitative or qualitative change in living or non-living environmental components that ecosystems cannot absorb without disrupting their balance." ¹¹
- Dr. Ahmed Abdel Karim Salama defines pollution as: "The degradation of environmental components, whereby beneficial elements transform into harmful ones, rendering them incapable of sustaining life."
- Another perspective defines pollution as: "Any present or future harm affecting any element of the environment, resulting from human activities—whether physical or moral—or natural causes, manifesting as an ecological imbalance, regardless of whether its source is within or outside the polluted environment." ¹²

2- Legislative Definition of Environmental Pollution

Most domestic ¹³and international ¹⁴ legislative definitions of pollution emphasize the concept of harm. Similarly, the Algerian legislator defines pollution as:

"Any direct alteration of the environment caused by an act that results in, or may result in, a situation harmful to the health and safety of humans, plants, animals, air, atmosphere, water, land, and both collective and individual property." ¹⁵

Third: The Concept of Civil Liability

In general, civil liability in the environmental field serves as an effective mechanism for protecting both humans and the environment from various forms of pollution and environmental violations. Recognizing the unique nature of environmental damage, environmental law scholars have emphasized the necessity of establishing a specialized legal framework for liability that aligns with the particular characteristics of environmental harm ¹⁶.

In the context of obligations, civil liability aims to compensate the injured party for any damage sustained. This liability can be based on different legal foundations:

- **Contractual liability**, which arises when a debtor fails to fulfill a contractual obligation.
- **Tort liability**, which applies when an individual violates a legal duty imposed upon them ¹⁷.

❖ Legal Foundations of Civil Liability

Traditionally, civil liability is based on fault, which can take different forms. This is known as fault-based liability (*responsabilité pour faute*). However, liability can also be established independently of fault, focusing instead on the damage itself as a basis for compensation.

Since Algerian legislation lacks explicit provisions outlining the basis of civil environmental liability, the general civil law rules serve as the primary reference, along with an analysis of the Environmental Protection Law to identify its relevant liability principles.

❖ **Key Challenges in Environmental Civil Liability**

One of the main difficulties in **establishing civil liability for environmental harm** lies in determining its legal foundation. As a result, **legal doctrine and theoretical approaches** play a crucial role in defining this basis. The main legal theories applied include:

1. **Traditional principles** such as **fault-based liability** and **damage-based liability**, given their relevance to environmental harm.
2. **The theory of wrongful acts** (*actes illicites*), which encompasses two essential sub-theories frequently invoked in environmental law:
 - **The theory of abuse of rights** (*théorie de l'abus de droit*), which holds individuals liable for exceeding the reasonable use of their rights in a way that harms others.
 - **The theory of neighborhood disturbances** (*troubles anormaux de voisinage*), widely recognized in traditional legal doctrine as a basis for civil liability concerning environmental damage.

These theories help establish a **coherent legal framework** for holding polluters accountable and ensuring adequate **compensation for environmental harm**.

SECOND SECTION: THE LEGAL FRAMEWORK OF CIVIL LIABILITY FOR ENVIRONMENTAL DAMAGE

When environmental harm occurs or environmental elements are violated, the responsible party is subject to legal liability. However, the unique nature of environmental damage presents challenges in determining the appropriate legal basis for liability and whether existing legal foundations are sufficient to cover all forms of environmental harm ¹⁸.

Upon examining Law No. 03-10 on environmental protection within the framework of sustainable development, it becomes evident that this law does not contain explicit provisions outlining the compensation mechanism in cases of environmental damage.

This legal gap necessitates resorting to civil law provisions as a general legal framework, particularly regarding compensation. However, even civil law does not explicitly address environmental damage or the specific liability mechanisms associated with it ¹⁹.

First: Fault-Based Liability

Fault serves as a common foundation for both international liability and civil liability in domestic legal systems (20). It represents the core principle upon which liability is established. According to Article 124 of the Algerian Civil Code, any fault that causes harm to another party imposes an obligation on the responsible party to provide compensation.

Furthermore, the Algerian legislator has expanded the concept of fault to include abuse of rights, as stipulated in Article 124 bis of the Algerian Civil Code ²⁰.

In the context of environmental pollution disputes, tort-based fault liability has found extensive application. This applies when:

- A violation of environmental legislation occurs, constituting a tortious act.
- A wrongful act directly affects an environmental element, as per environmental laws and sector-specific regulations.
- The intentional act or negligent behavior is aimed at harming the environment.

Thus, fault-based liability plays a critical role in environmental protection, providing a legal avenue for compensation and holding polluters accountable.

1- Elements of Fault-Based Liability

Civil liability is based on three fundamental elements: fault, damage, and causal link, all of which must be established to invoke this type of liability. However, proving these elements is often challenging in cases of environmental pollution, making this form of liability, in many instances, incapable of providing justice to victims of environmental harm ²¹.

In an attempt to apply this type of liability in the environmental field, legal scholars and courts have sought to expand the concept of fault and ease the burden of proof, as contractual fault in environmental liability does not raise the same issues as tortious fault, which presents significant evidentiary difficulties. This has led some modern legal systems to establish presumed fault liability on the part of the responsible party, thereby relieving the injured party of the burden of proving ordinary fault. This approach broadens liability, facilitates compensation for pollution victims, and ensures their right to redress without requiring proof of fault, relying instead on liability for the acts of others and liability arising from objects ²².

Additionally, the procedural requirements for filing a civil liability lawsuit for environmental damage do not pose significant issues when dealing with harm that immediately affects individuals or property. However, complexities arise in cases of pure environmental damage, particularly when it affects a natural environmental element and involves delayed or indirect harm, making it difficult to apply traditional procedural and formal liability rules ²³.

2- Application of the Fault Theory to Environmental Damage

The recent emergence of environmental protection laws, the multiplicity of risks threatening natural resources, and the severity of damage caused by these risks are among the key challenges that make it difficult to rely on fault-based liability as an effective framework for addressing all

forms of environmental harm. Despite the significant doctrinal support and broad judicial application of this theory, especially with the rise of major environmental issues, its effectiveness remains limited particularly in cases of environmental pollution .

While it is relatively easy to apply fault-based liability in cases of acute environmental damage that occurs suddenly (since proving fault and establishing a causal link is straightforward), difficulties arise when dealing with long-term environmental damage that takes time to manifest fully. This delayed effect, referred to by some as "latent damage", complicates the application of fault-based liability because the harm may only become apparent after a significant period ²⁴.

As a result, modern legal doctrine, along with national and international legislation, has sought alternative legal foundations to overcome the shortcomings of fault-based liability and ensure that all environmentally harmful activities leading to damage are properly addressed.

Second: The Objective Approach to Civil Liability for Environmental Damage

With the evolution of civil liability rules and the decline of its personal nature, the 21st century has witnessed a reduced role of fault as the primary foundation of tort liability. Instead, a new form of liability has emerged, based on the concept of risk—focusing on damage rather than fault. This shift has been particularly significant with the expansion of industrial activities that disrupt environmental balance. This type of liability is referred to as objective liability, as it is centered on the damage itself, rather than the conduct or fault of the responsible party. The damage resulting from such activities often leads to environmental pollution, with effects that extend beyond the notion of personal fault ²⁵.

Accordingly, liability in such cases is not based on proving fault—whether actual or presumed—but solely on the existence of damage. This means that the responsible party cannot evade liability by proving the absence of fault, nor can they rely on external causes to avoid responsibility. Objective liability, therefore, ensures compensation for victims even in the absence of fault, reinforcing a more effective mechanism for redressing environmental harm ²⁶.

1- The Theory of Neighborhood Disturbance as a Basis for Environmental Liability

This theory is a relatively modern concept and represents one of the applications of objective liability, where the existence of damage alone is sufficient to establish liability. With industrial and technological advancements, as well as the expansion of economic activities, the proliferation of factories, commercial establishments, and public facilities has led to increased environmental pollution in the form of smoke, noise, unpleasant odors, vibrations, radiation, and the emission of toxic gases ²⁷.

The theory of neighborhood disturbance distinguishes between two types of nuisances:

- Ordinary nuisances, which are an inherent part of coexistence and must be tolerated to avoid disrupting neighbors' activities. No liability is imposed for these nuisances.
- Unusual nuisances, which neighbors are not required to endure. The party causing such disturbances must compensate affected neighbors for the harm caused.

The right to compensation arises when the disturbance is deemed excessive or constitutes severe environmental pollution. However, minor or temporary pollution is typically not compensable, as the natural environment can often absorb or neutralize it. In most cases, such pollution does not result in significant harm, except for individuals with preexisting health conditions, who may be more vulnerable to environmental pollutants than the average person ²⁸.

The Algerian legislator has adopted the theory of neighborhood disturbance, following the example of French and Egyptian legislation. This is reflected in Article 691 of the Algerian Civil Code, which states: *"The owner must not abuse their right in a way that harms the property of their neighbor. A neighbor cannot claim compensation for ordinary nuisances; however, they may request the removal of nuisances if they exceed normal limits."*

At the international level, the concept of neighborhood disturbance has been widely applied in addressing environmental damage from various sources, including marine pollution, air pollution, and the environmental consequences of nuclear weapons use. In the context of international relations, this theory is based on three fundamental principles:

1. A state's obligation not to cause environmental harm to its neighboring states.
2. State responsibility for environmental damage inflicted on another state.
3. The requirement that the harm be of sufficient severity to be classified as abnormal or excessive ²⁹.

2- New Foundations for Environmental Civil Liability

Despite the significant role of existing legal principles in environmental protection, the continuous industrial and scientific advancements, the emergence of new industries and technologies, and the increasing environmental damage have necessitated the search for new foundations of liability. This shift aims to redefine the function of civil liability, moving beyond mere compensation towards preventing environmental damage before it occurs ³⁰.

Preventing environmental harm rather than compensating for it after the fact represents the ultimate humanitarian goal that societies strive to achieve. Algeria has aligned with this approach through its environmental laws, particularly Law No. 03-10, which was developed based on reports prepared by the Ministry of Regional Planning and Environment. These reports provided an assessment of Algeria's environmental situation and contributed to the formulation of modern environmental legislation.

One of the key objectives of Law No. 03-10 was to update Algeria's legal framework in line with internationally recognized environmental protection principles, such as:

- The precautionary principle, which mandates preventive measures to avoid environmental harm.
- The preventive action principle, emphasizing early intervention to mitigate risks.
- The "polluter pays" principle, ensuring that those responsible for pollution bear the cost of environmental damage.

- The information and participation principle, which promotes transparency and public involvement in environmental decision-making.

These principles collectively reinforce Algeria's legal commitment to environmental sustainability by shifting the focus from compensation to proactive environmental protection.

A- The Precautionary Principle

This principle imposes an obligation on individuals and states to adopt preventive measures and necessary actions to avoid environmental degradation, whether concerning known environmental risks identified by scientific research or potential risks where uncertainty exists about their future occurrence.

The precautionary principle gradually emerged in international law through various international agreements, including:

- The Convention on Long-Range Transboundary Air Pollution, signed in Geneva on November 13, 1979.
- The Vienna Convention for the Protection of the Ozone Layer, adopted on March 22, 1985.
- The United Nations Convention on the Law of the Sea, dated December 10, 1982³¹.

Subsequently, this principle was incorporated into national legal systems, with Germany being among the first countries to adopt it in domestic legislation. In Algeria, the precautionary principle was introduced as part of the country's modern environmental protection strategy through Article 3(4) of Law No. 03-10 on Environmental Protection within the Framework of Sustainable Development. Additionally, Executive Decree No. 07-145 defines the scope and procedures for environmental impact assessments and approval processes.

Beyond these legal provisions, the precautionary principle has been applied to various environmental sectors, including:

- The protection of animal species and their habitats³².
- Disaster risk prevention and management, as part of sustainable development, through Law No. 04-20³³.

By integrating the precautionary principle into its legal framework, Algeria has strengthened its commitment to proactive environmental protection, ensuring that preventive measures are prioritized over reactive solutions.

B- The Prevention Principle

In line with international agreements and European directives, and following the French legislator, the Algerian legislator has incorporated this principle into its new environmental law. Article 2(2) of this law establishes the prevention of all forms of pollution and environmental damage as one of its main objectives. Additionally, Article 3(5) of the same law reinforces this commitment by mandating preventive actions to protect the environment.

C- The "Polluter Pays" Principle

The "Polluter Pays" principle is one of the core legal principles underlying environmental liability in Western legal systems. It has been explicitly recognized in the legislation of numerous countries and several international agreements. Modern environmental policies require that those responsible for environmental damage bear all costs associated with preventive measures, as well as restoring damaged areas to their original state.

This principle does not focus on identifying the direct polluter or the various contributing factors to pollution-related civil liability. Instead, it imposes financial burdens objectively on all activities that are likely to impact the environment³⁴. Under this principle, the polluter—whether an individual, company, or state—is held responsible for environmental damage, even in the absence of proven fault.

To establish liability, it is sufficient to prove the causal link between the polluter's actions and the resulting environmental harm. This principle is rooted in the risk-based liability theory, which shifts the financial and legal burden of pollution management onto those engaging in activities that pose environmental risks³⁵.

D- The Principle of Information and Participation

This principle aims to enhance cooperation among state institutions and various entities to prevent environmental disputes by ensuring the dissemination of relevant data and information regarding activities or measures that can be taken to prevent environmental damage.

Additionally, it promotes consultation and mutual participation between government bodies or between the government and individuals, facilitating the exchange of information on whether to proceed with or halt certain projects that could potentially threaten environmental safety³⁶.

THIRD SECTION: SANCTIONS OF CIVIL LIABILITY FOR ENVIRONMENTAL DAMAGE

The application of civil liability rules results in the right to compensation, which can take one of two forms: specific (in-kind) compensation or monetary compensation. However, due to the insufficiency of traditional compensation mechanisms in fully covering environmental damage, particularly pure environmental harm, additional legal frameworks have been introduced to reinforce compensation mechanisms and provide comprehensive coverage for affected parties. These supplementary mechanisms include insurance systems and compensation funds, which aim to enhance financial recovery and ensure more effective redress for environmental damage³⁷.

First: Compensation for Environmental Damage

To preserve the environment and ensure individuals' right to a healthy environment, the Algerian legislator has adopted a policy of remedying damage caused by pollution through either specific (in-kind) compensation or monetary compensation for the injured party.

1- In-Kind Compensation for Environmental Damage

In general, in-kind compensation refers to restoring the affected situation to its original state before the damage occurred. It is considered the most effective form of compensation, as it fully repairs the harm and is commonly applied in contractual obligations, where debtors can often be compelled to perform specific actions to fulfill their obligations ³⁸.

However, in the context of tort liability, the scope of in-kind compensation is more limited, as it is only feasible when the wrongful act involves an action that can be reversed or undone ³⁹.

In environmental liability, in-kind compensation takes various forms, including:

- Restoring and rehabilitating the polluted environment to its original condition.
- Creating suitable living conditions for areas at risk of environmental harm.
- Halting unlawful activities, either permanently or temporarily.
- Restructuring activities as a preventive measure for the future, rather than merely eliminating the current damage caused by such activities. This ensures the prevention of future environmental harm rather than just addressing existing pollution.

2- Monetary Compensation for Environmental Damage

In cases where in-kind compensation is impossible because the damage suffered by the affected party cannot be repaired, the judge may award monetary compensation. The Algerian legislator has adopted the principle of full compensation, ensuring that compensation covers all damages ⁴⁰, in accordance with Article 176 of the Algerian Civil Code ⁴¹.

Second: Complementary Mechanisms for Compensation of Environmental Damage

The compensation system established under civil liability rules may not always achieve the desired objectives in the environmental field due to the unique nature of environmental damage. Given the limitations of compensation in providing comprehensive coverage for such damage, it has become necessary to resort to alternative mechanisms that allow affected parties to seek fair compensation while ensuring better protection of the damaged environmental elements. Among these mechanisms are insurance systems, including civil liability insurance for environmental pollution damage and direct insurance for environmental damage, as well as the intervention of compensation funds, which help provide coverage and fill the gaps left by traditional compensation mechanisms.

1- Civil Liability Insurance

Technological advancements have introduced numerous risks that threaten human well-being, prompting efforts to protect victims and compensate them for damages suffered. This has led to the emergence of collective compensation systems, where society has developed mechanisms that assume responsibility for compensating damages or risks, a concept known as collective liability, allowing the injured party access to a collective financial entity responsible for compensation alongside the liable party. One of these mechanisms is insurance ⁴².

Given the importance of insurance in achieving these objectives, particularly in addressing modern risks such as pollution, civil liability insurance has been introduced to provide coverage, a practice widely adopted in developed countries, unlike in Arab legal systems, where its application remains limited, as in automobile accidents.

Liability insurance is among the traditional complementary mechanisms designed to cover risks that civil liability rules fail to address, ensuring social protection by transferring financial liability from the insured party to the insurer. As a result, the insurer guarantees adequate compensation for the injured party, restoring their financial position.

Among the key agreements in this field is the Lugano Convention, which obliges any operator engaged in polluting activities to subscribe to a financial insurance system, a global initiative aimed at preventing insolvency among polluters by mandating civil liability insurance.

The Reality of Environmental Insurance in Algeria

Despite the significant environmental risks faced by Algeria, there is no clear regulatory framework specifically addressing environmental insurance, even in sectors with high pollution potential, such as classified industrial facilities.

The voluntary nature of environmental insurance has led insurance companies to avoid covering such risks, while classified facilities are not legally required to obtain insurance coverage. Additionally, the absence of regulatory oversight over polluting entities has further weakened the role of insurance in addressing environmental damage. Moreover, the lack of legal claims for environmental damages discourages insurance companies from providing environmental liability coverage.

The National Insurance and Reinsurance Company (CAAR) has agreed to cover environmental damage caused by accidents within industrial facilities, provided that the event is sudden and unexpected. However, the maximum coverage limit is set at 2 million DZD, a nominal amount compared to the extent of environmental damage pollution can cause.

A more recent approach involves direct insurance for pollution risks, offering comprehensive coverage for all environmental damage or for the insured site in case of a covered risk. Under this system, the insurance company provides direct compensation to the insured, covering:

- Damage to the insured site,
- Cleaning costs,
- Restoration expenses,
- Compensation for third parties affected by pollution without requiring proof of liability.

One of the main advantages of direct insurance is that coverage is triggered as soon as environmental damage occurs, without the need to establish legal liability, making it a solution to overcome the challenges of applying civil liability rules.

2- Compensation Funds

Although the mandatory insurance system provides significant benefits by allowing victims to receive compensation without filing a lawsuit against the liable party, the magnitude of environmental damage compensation often exceeds the financial capacity of insurance companies. Therefore, to cover environmental pollution risks, states have collaborated with insurance companies to supplement the limitations of the insurance system in addressing environmental damage by establishing compensation funds and reinforcing them with alternative mechanisms to ensure comprehensive risk coverage. The primary goal of these compensation funds is to achieve full compensatory justice for victims by distributing industrial risks among all entities engaged in activities that may contribute to such risks ⁴³.

It is worth noting that these funds operate as a complementary or supplementary mechanism to both civil liability and insurance systems. In some cases, full compensation may not be achieved, such as when liability exemptions apply or when damages exceed the coverage limit of the insurance contract. In such situations, compensation funds serve as the ultimate guarantee to ensure that victims receive complete financial redress ⁴⁴.

CONCLUSION

In conclusion, the application of civil liability in addressing environmental damage primarily aims to establish preventive measures to avoid harm. However, once damage occurs, the rules of civil liability must be enforced to provide compensation, whether in the form of in-kind or monetary redress, which should be reinforced by halting polluting activities.

The protection of victims' rights and ensuring their entitlement to compensation have led to the development of new mechanisms for liability coverage, including modern compensation systems, particularly liability insurance for environmental damage, which has significantly contributed to achieving the intended objectives. Additionally, complementary mechanisms have been introduced to enhance civil liability rules for environmental damage, including compensation funds designed to cover catastrophic and unexpected damages that civil liability alone cannot address.

Recommendations

1. Ensure political commitment to environmental protection within the framework of sustainable development.
2. Regulate provisions concerning polluting enterprises to establish a comprehensive legal framework, particularly regarding compensation, insurance, and specialized monitoring committees.
3. Introduce special compensation mechanisms for environmental pollution damages while strengthening the role of environmental expertise.
4. Promote environmental awareness through scientific seminars and public discussions.
5. Enact legislation to strengthen compensation funds, particularly in cases where the responsible party is unidentified, insolvent, or legally exempt from liability.

6. Mandate industrial facilities and other pollution sources to utilize modern technologies to minimize pollution risks.

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³¹ Mohamed Safi Youssef, *The Precautionary Principle for Preventing Environmental Damage: A Study in the Framework of International Environmental Law*, Dar Al-Nahda Al-Arabia, No Edition, Egypt, 2007, p. 177.

³² Executive Decree No. 08-412, dated December 24, 2008, defining protective measures for the preservation of protected animal species and their habitats, *Official Gazette*, Issue No. 01, published

³³ Law No. 04-20, dated December 25, 2004, on the prevention of major risks and disaster management within the framework of sustainable development, Official Gazette, Issue No. 84, published on December 29, 2004.

³⁴ Waali Jamal, Legal Protection of Terrestrial Environment from Pollution Risks: A Comparative Study, Doctoral Thesis in Private Law, Faculty of Law, University of Tlemcen, 2009-2010, p. 274.

³⁵ Sharaf Arafat Abu Hajaza, The "Polluter Pays" Principle, Egyptian Journal of International Law, Issue No. 62, published by the Egyptian Society of International Law, Cairo, Egypt, 2006, p. 9.

³⁶ Mohamed Saeed Abdullah Al-Humaidi, Civil Liability Arising from Marine Pollution and Legal Protection Methods, New University House, 1st Edition, Alexandria, 2008, p. 29.

³⁷ Yousfi Nour-Eddine, Previous Reference, p. 308.

³⁸ Hwashin Ridouane, Previous Reference, p. 72.

³⁹ Article 164 of the Algerian Civil Code, which states: "The debtor shall be compelled, after being duly notified under Articles 180 and 181, to perform their obligation in kind whenever possible."

⁴⁰ Al-Arabi Belhaj, General Theory of Obligation in Algerian Civil Law, Part II: Legal Facts (Tortious Act, Unjust Enrichment, and Law), University Publications Office, Algeria, 1995, p. 266.

⁴¹ Article 176 of the Algerian Civil Code, which states: "If it is impossible for the debtor to fulfill the obligation in kind, they shall be ordered to compensate for the damage resulting from non-performance, unless they prove that the impossibility arose due to a cause beyond their control. The same shall apply if the debtor delays in fulfilling their obligation."

⁴² Yousfi Nour-Eddine, Previous Reference, p. 355.

⁴³ Abbade Kada, Previous Reference, p. 20.

⁴⁴ Abbade Kada, Same Reference, p. 21.