

## Compensation for industrial pollution damage in Algerian legislation

Yousra Boulakouas <sup>1</sup>, Sara Boulakouas <sup>2</sup>, Abdesselam Henni <sup>3</sup> and Mounir Benazzoug <sup>4</sup>

<sup>1</sup> Institute of Law, Law Department, University Center of Barika / Algeria, Amdoukal Road, Barika, 05001, Batna, Algeria. Email: [yousra.boulakouas@cu-barika.dz](mailto:yousra.boulakouas@cu-barika.dz)

<sup>2</sup> Faculty of Law, Contracts and business law laboratory, Law Department, University of the Mentouri brothers- Constantine 1/ Algeria. Email: [boulakouas.sara@gmail.com](mailto:boulakouas.sara@gmail.com)

<sup>3</sup> Faculty of Law and Political Science, Laboratory of Studies and Research in Law, Family and Administrative Development, Law Department, University of Msila/ Algeria. Email: [abdesslam.henni@univ-msila.dz](mailto:abdesslam.henni@univ-msila.dz)

<sup>4</sup> Faculty of Law and Political Science, Laboratory of rural economic development, Law Department, University Ibn Khaldoun, Tiaret Algeria. Email: [mounir.benazzoug@univ-tiaret.com](mailto:mounir.benazzoug@univ-tiaret.com)

**Abstract---**Industrial pollution causes damage to elements of the natural environment (air, water, soil), which then reflects on humans, causing various physical, material, and moral harms. These damages are remedied through the establishment of civil liability, which concludes with either specific compensation or monetary compensation. Given the particular nature of these damages, there are challenges in compensating for them, especially the damages affecting the natural environment.

**Keywords---**compensation, pollution, industrial pollution, Algerian legislation.

### 1. Introduction:

Environmental pollution occurs either by human action as a result of industrial development and scientific progress achieved in various fields, where the increased use of transportation means has led to the rise in emissions of toxic gases, smoke, and noise. Moreover, factories, especially those for petroleum, oil, cement, power generation plants, water purification plants, nuclear energy plants, and chemicals, have spread, increasing their waste, which has become difficult to dispose of.

Or by natural action due to the occurrence of volcanoes, lightning, earthquakes, sandstorms, and spontaneous forest fires, leading to the spread of ash and dust in the atmosphere, the emission of toxic gases, and the destruction of crops. This type of pollution is difficult to control and manage.

---

### How to Cite:

Boulakouas, Y., Boulakouas, S., Henni, A., & Benazzoug, M. (2025). Compensation for industrial pollution damage in Algerian legislation. *The International Tax Journal*, 52(3), 789–804. Retrieved from <https://internationaltaxjournal.online/index.php/itj/article/view/101>

The International tax journal ISSN: 0097-7314 E-ISSN: 3066-2370 © 2025

ITJ is open access and licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

Submitted: 07 Feb 2025 | Revised: 10 March 2025 | Accepted: 25 April 2025

Both types of pollution cause environmental damage that requires compensation. The environmental damage that necessitates liability is the one for which humans are responsible. In contrast, pollution caused by nature cannot be attributed to legal liability since nature is not considered a legal entity.

Industrial pollution is caused by human action; therefore, civil liability must be established to warrant compensation. Given the unique nature of this damage, which makes it special, we are prompted to raise the following question: How is compensation for industrial pollution damage addressed in Algerian legislation?

To address this issue, the subject has been divided into two main sections. The first section is dedicated to the conditions for entitlement to compensation for industrial pollution damage, while the second section focuses on the forms of compensation for environmental damage resulting from industrial pollution.

### **The First Section: Conditions for Entitlement to Compensation for Industrial Pollution Damage**

Damage caused by industrial pollution is remedied through the application of civil liability rules, provided certain conditions are met, including fault (Because civil liability for environmental pollution is generally based on three pillars, as it is not excluded by a special text that excludes it from the scope of tort liability. To be entitled to compensation, the injured party must prove the presence of) (if civil liability for pollution is based on fault), damage, and causation. For damage resulting from industrial pollution, several conditions must be satisfied to enable the harmed party to claim compensation in court. Due to the unique nature of this damage, proving it can present challenges.

**First: Concept of Industrial Pollution:** Industrial pollution is a form of environmental degradation and is one of the most significant issues facing the environment. It is not a modern phenomenon; rather, it has been present since humans first inhabited the Earth and began to exploit natural resources without regard for environmental considerations or developmental needs.

The problem of pollution began with the discovery and use of fire, which produced smoke that contaminated the atmosphere. The issue became more acute with scientific and technological advancements and the continuous increase in population, which overwhelmed the environment's capacity to renew its natural resources and absorb the excess. This imbalance disrupted the equilibrium of natural elements and hindered the environment's ability to process human waste and byproducts of various activities, particularly industrial ones.

#### **First-1- Definition of Industrial Pollution:**

The Algerian legislator defines pollution as any change that affects the components of environmental elements, whether directly or indirectly, caused by human actions or natural phenomena ( Official Gazette, No. 43, 2023). This definition implies that damage resulting from pollution is compensable, regardless of whether it is caused by human activities or natural events.

Legal scholars define pollution as anything that impacts all elements of the natural environment, whether living (such as plants, animals, and humans) or non-living (such as air, soil, lakes, and seas) (Ahmed Madhat Islam, p. 17.). This definition does not specify the effects of such impacts.

Industrial pollution, specifically, is described as a phenomenon resulting from production and manufacturing processes, and it is a source of all types of pollution (Ben Arabi Abdel Karim, p. 22.).

**First-2- Distinction Between Various Forms of Environmental Harm:** The forms of environmental harm are numerous, with pollution being the most prevalent and widespread. It is essential to differentiate between pollution and other key forms, such as environmental damage, environmental violation, and environmental degradation.

1- Environmental Damage and Pollution: The term "environmental damage" is broader than "pollution," as any action that harms the environment constitutes environmental damage, whether it

involves pollution or other forms. However, not all damage is due to pollution (Raif Muhammad Labib, p. 34.); for example, intensive fishing can cause environmental damage, but it cannot be classified as pollution. Environmental damage refers to any negative impact on the environment or any of its components that disrupts its balance, regardless of the source of the harm. Thus, while all pollution can lead to damage, not all damage is pollution.

2- Environmental Violation and Environmental Pollution: Environmental violation involves any human action that constitutes an encroachment on one of the elements of the environment, leading to a threat or potential harm (Raif Muhammad Labib, op. cit, p. 35). Liability arises from environmental violation due to human intervention, regardless of whether actual damage occurs, unlike pollution, which can result from either human actions or natural events. Civil liability for pollution only arises if the pollution exceeds permissible limits and causes harm.

3- Environmental Degradation and Pollution: Environmental degradation refers to altering the natural state of environmental elements, which were created and provided for human benefit, thereby disturbing their ecological balance (Ibid, p. 36.). Environmental degradation can occur through pollution of one of its elements or any action leading to its deterioration, such as soil erosion or deforestation. Therefore, "environmental degradation" is a broader term than "pollution," as pollution is not the only cause of all environmental harm. Environmental violation, whether through pollution or any other act of transgression, leads to environmental degradation and damage.

Second: Conditions Required for Compensation for Industrial Pollution Damage: Before discussing the conditions required for compensation for industrial pollution damage, it is essential to define its nature by describing it, identifying its types, and outlining its characteristics.

Second-1- Nature of Environmental Damage Resulting from Industrial Pollution: To define the nature of damage caused by industrial pollution, it is necessary to describe and identify its types and characteristics.

1- Definition of Environmental Damage Resulting from Industrial Pollution: Environmental damage from industrial pollution refers to harm resulting from various forms of pollution affecting different elements of the environment. The term "environmental damage" is a modern concept first used in 1968, also referred to as ecological damage, environmental harm, pollution, or environmental disturbance.

The Algerian legislature has not defined damage in civil law but has outlined the pillars of civil liability, namely fault, damage, and causation. Nor has it defined damage in the Environmental Protection Law within the framework of sustainable development, but it has indicated types of damages to the environment, including those affecting plants, air, soil, and principles limiting them, as stated in Article 3. This led some to suggest that the legislature acknowledged ecological damage (Ounas Yahya, , p. 286 ).

Legal doctrine defines it as the harm that affects individuals and objects in the environment (Saeed Saad Abdel Salam, p. 29). According to this definition, environmental damage includes all types of harm to environmental elements. Although this definition is brief, it suffices to specify the elements that are harmed: individuals and objects, which can be either living or non-living, natural or artificial, present in the environment.

Based on the fact that pollution directly harms natural elements such as water, air, and land environments, as well as living and non-living resources, which then affect humans and their property, environmental pollution damage can be defined as the harm that affects one of the natural elements, such as water, air, land, and various resources therein, caused by pollution. This harm reflects on humans and artificial elements, causing various damages.

## **2- Characteristics of Environmental Damage Resulting from Industrial Pollution:**

Environmental damage from industrial pollution has specific characteristics that give it a unique nature:

**2- 1 - Comprehensive Nature:** It affects the natural environment in its various elements. Damage to the air environment, for instance, can impact the water and land environments due to the interconnected nature of the ecosystem. The damage does not affect only an individual (Hassan Ali Al-Daridi and

Karima Abdul Rahim Al-Taie, p. 38.) but can impact a group of people, as natural elements like water, air, and soil are common property. Thus, its effects are widespread both in terms of geography and the people affected, often extending beyond the immediate area of origin due to air currents (Saeed Saad Abdel Salam, op. cit, p. 31).

**2-2- Gradual Manifestation:** This type of damage often requires a period to manifest after pollution occurs (Geneviève Viney, p. 166.), resulting from a sequence of accumulated harms from gradual, repeated pollution. This makes it difficult to attribute the damage directly to a specific causative action (Yasser Farouk Mohamed El-Menawy, p. 207.), rendering such damage indirect.

**2-3- Persistent Damage:** Often stemming from legally permissible activities, this damage continues as long as the source persists. For example, emissions of smoke and toxic gases from various factories continue as long as the factories operate, and thus, the resulting damages are ongoing and cannot be completely mitigated, even with compensation for past damages (Ahmed Mahmoud Saad, p. 223.).

**2-4- Unusual Damage:** In the context of neighborhood law, environmental damage can be considered unusual, which is a necessary condition for establishing the liability of a neighbor causing environmental pollution (Atta Saad Mohamed Al-Hawas, p. 427.).

**2-5- Severe Consequences:** Environmental damage can sometimes be irreparable, making prevention crucial (Fougali Halima, p. 79.). as prevention is better than cure (www.statimes.com, 2017). This characteristic has led countries like Algeria to adopt the precautionary principle to prevent environmental harm.

**2-6- Connection to Economic Development:** Addressing and solving environmental issues often requires economic resources and capabilities, which can only be provided through economic growth. This growth may be impacted if natural resources are affected (Hassouna Abdelghani, p. 177.).

Therefore, environmental damage has several unique characteristics, distinguishing it from commonly understood types of harm.

**3- Types of Environmental Damage Resulting from Industrial Pollution:** Environmental damage from industrial pollution can be divided into two main categories: damage that affects individuals and their property, known as private environmental pollution damage, and damage that affects natural elements of the environment, referred to as pure environmental pollution damage.

**3-1- Private Environmental Pollution Damage:** his type of damage is defined as the harm resulting from pollution that affects individuals personally, their property, or their emotions and feelings (Ata Saad Muhammad Al-Hawas, op. cit, p. 404.). It encompasses damage to human rights or legitimate interests due to industrial pollution and includes cases like death, physical injuries, and damage to property.

Private environmental pollution damage can be categorized into material and moral damage. Material damage further divides into bodily and financial damage (Saeed Al-Sayed Qandil, p. 35.).

Bodily Damage includes various forms of physical harm, such as diseases (e.g., cancer caused by inhaling chemical gases from a factory or exposure to radioactive waste), loss of reproductive ability, or congenital deformities in offspring due to parental exposure to toxic gases or radiation. These effects can extend beyond the directly affected individual, impacting their descendants (Abdullah Turki Hamad Al-Ayal Al-Taie, p. 61.) (Abdullah Turki Hamad Al-Ayal Al-Taie, p. 61.).

One of the most important forms of damage is that of the Financial. An example is the disposal of industrial waste in the sea, leading to marine pollution, fish deaths, and subsequent financial loss for fishermen, hotel owners due to decreased tourism, and the state from lost tax revenue.

Damage also includes moral damage, it is often indirect, moral damage arises from physical injuries accompanied by psychological pain or the deprivation of pleasures due to pollution (Anwar Juma Ali Al-Tawil, p. 42.). Unlike material damage, moral damage is intangible and affects a person's freedom, honor, reputation, social or financial status, such as restricting recreational activities like swimming due to marine pollution.

**3-2- Pure Environmental Pollution Damage:** Pure environmental pollution damage was only recognized in the 1980s, with modern environmental legislation accepting the concept of compensation for such damage (Atta Saad Muhammad Al-Hawas, op. cit, p. 423.). This type of damage affects the

natural elements of the environment, leading to an imbalance in the ecosystem due to harmful changes in its physical or chemical properties.

An example is the 1989 Exxon Valdez oil spill in Prince William Sound, Alaska, where 38,000 tons of oil contaminated over 1,000 miles of coastline, causing the death of 26,000 seabirds (Muhammad Al-Sayyid Al-Faqih, p. 15). Such incidents exemplify pure environmental pollution damage.

In Algerian legislation, pure environmental pollution damage is recognized under principles like biodiversity conservation and non-degradation of natural resources (See Article 3, paragraphs 1 and 2 of the Algerian Environmental Protection Law within the Framework of Sustainable Development). These principles aim to prevent harm to natural resources such as plants, air, land, and groundwater, which are considered pure environmental damage.

These damages affect the components of the environmental medium, leading to an imbalance by causing harmful changes in its physical or chemical properties (Yasser Farouk Muhammad Al-Minawi, op. cit, p. 174.). This type of damage results in adverse alterations to the natural elements of the environment, which can disrupt the equilibrium of the ecosystem.

Thus, pure environmental pollution damage refers to harm inflicted on natural environmental elements, excluding humans and human-owned entities. It involves altering the chemical or physical properties of these elements, negatively impacting the balance of the ecosystem.

**Second-3- Conditions Required for Compensation for Industrial Pollution Damage:** Given the particularity of environmental pollution damage, it's essential to explore whether it is compensable under general rules.

**1-The Damage Must Be Realized:** For damage to be compensable, it must be actual, meaning it has either already occurred or its occurrence in the future must be certain. This allows the judge to determine the extent and appropriate amount of compensation (Mustafa Al-Awji, p. 197). Compensation cannot be granted for potential damages, which are uncertain and may or may not occur. Examples of potential environmental damages include the possibility of poisoning from consuming products treated with chemical pesticides or the risk of future cancer in descendants due to exposure to radioactive materials. Such damages are considered non-compensable due to their speculative nature.

Compensation extends not only to the damage that has already occurred but also to future damage that is certain to happen (Belhaj Al-Arabi, p. 158.). For instance, if a worker suffers a permanent disability while working in a factory, they can claim compensation not only for the damage that has already occurred but also for future damages, such as loss of earnings due to their inability to work.

Additionally, damage can be realized in cases of lost opportunities, where an individual is deprived of a chance that could have been beneficial (Ibid, p. 163.). Algerian legislation permits compensation for damage resulting from lost opportunities, as outlined in Article 182, paragraph 1 of the Civil Code. For example, in the environmental context, if an individual is deprived of the use of their property due to nearby environmental damage, such as noise and unpleasant odors from a neighboring factory leading to tenants fleeing, compensation for this lost opportunity is warranted.

Since most environmental damages do not occur immediately but rather manifest over time, often due to cumulative effects, proving the occurrence of damage or its certainty can be challenging. For instance, exposure to nuclear radiation can affect multiple generations, given that nuclear radiation has a half-life of approximately 4.5 billion years (Foghali Halima, op. cit, p. 78), making it difficult for victims to prove the damage or its certainty (Anwar Juma Ali Al-Tawil, op. cit, pp. 52-53).

**2- The Damage Must Be Direct:** The concept of direct damage refers to the immediate result arising from the harmful act that has been characterized by fault, and which the injured party could not have reasonably avoided. This is stipulated in Article 182, paragraph 1 of the Algerian Civil Code.

**Direct and Personal Damage:** Direct and personal damage includes damage to other individuals, often referred to as consequential or reflective damage (Belhaj Al-Arabi, op. cit, p. 155.). Most environmental damages are of a reflective nature, as the harm inflicted on people and property stems from damage to various natural elements. For instance, air pollution can lead to various health issues in humans. There is no issue in claiming compensation for damage resulting from the pollution of natural elements; an

individual suffering from a respiratory disease or cancer due to exposure to toxic gases from a neighboring factory can seek compensation from the factory owner for such harm.

**Environmental Damage as Indirect:** Environmental damage is often indirect, occurring due to the accumulation of multiple harms and becoming apparent in the future. Each damage results from preceding harm, making it challenging to compensate under tort liability rules that require the damage to be direct.

However, Algerian legislation permits compensation for indirect environmental damage. The law allows legally recognized associations to claim compensation for all damages affecting collective interests, whether direct or indirect (See Article 37 of the Algerian Law on the Protection of Evidence in the Framework of Sustainable Development.).

Article 37 of the Algerian legislation provides an exception to the general rules on compensation, allowing claims for indirect environmental damage under two conditions:

First one is: The claim for compensation must be made by legally recognized associations.

Second one is: The damage must result from a violation of laws and regulations related to environmental protection. Therefore, legally recognized associations cannot claim compensation for indirect environmental damage resulting from unusual neighborhood nuisances.

**3- The Damage Must Be Personal or Collective:** To be eligible for compensation, the damage must affect either an individual or a group, making it a special type of damage often referred to as collective damage (Hala Salah Yassin Al-Hadith, p. 139.). The collective damage that warrants compensation affects public or collective interests (Hassan Ali Al-Dhanoun, p. 268.).

**1- Collective Damage:** In the environmental context, damage often impacts a group rather than an individual alone. Collective damage, which may be claimed for compensation, affects public or collective interests. Algerian legislation permits claims for such damages under Article 36 of the Environmental Protection Law, which allows legally recognized associations to bring lawsuits for environmental harm even if the harm does not directly affect their regular members.

According to Article 37 of the same law, these associations can exercise civil party rights concerning events that cause direct or indirect harm to the collective interests they aim to protect, provided that such harm results from violations of environmental protection laws.

This recognition is an exception to the general rule requiring personal and direct interest for legal standing. The Algerian legislator has thus mitigated the challenges faced by judges in environmental damage cases by allowing legally recognized associations to claim compensation for direct or indirect damages affecting collective interests, provided that the incidents violate environmental protection laws (Wanas Yahya and his associates, p. 166).

This approach addresses the practical difficulties in proving fault and damage in environmental cases, which might be beyond the financial means of individual plaintiffs.

**4- No Prior Compensation:** Compensation can only be claimed if the damage has not already been compensated. Once compensation is granted, the harm is considered remedied, and no further claims for that same damage are valid (Hassan Ali Al-Dhanoun, op. cit, p. 223.).

**5- Damage Must Result from Unusual Neighbor Nuisance:** For claims regarding environmental damage in the context of neighboring properties, the harm must exceed normal levels and be characterized by unusual and dangerous features (Ata Saad Muhammad Al-Hawas, op. cit, p. 427 ). Algerian Civil Code Article 692, paragraph 2, outlines criteria for determining this, including:

- Local customs
- The nature of the properties involved
- Their relative locations
- The intended use of each property

**6- Impact on a Legal Right or Financial Interest:** To be eligible for compensation, the damage must affect a recognized legal right or legitimate financial interest protected by law (Filali Ali, p. 284.). For

example, damage that impacts a minor due to the physical injury of a person who supports them (Belhaj Al-Arabi, op. cit, p. 147.) would be compensable. The right or interest harmed must be legally protected and not contrary to public order.

**Second-4- Challenges in Proving Industrial Pollution Damage:** Proving damage from industrial pollution presents several challenges, especially within the framework of tort liability. These challenges stem from the delayed appearance of damage, difficulty in assessing its extent, and complexities in identifying the direct cause due to the involvement of multiple pollutants (Anwar Juma Ali Al-Tawil, op. cit, p. 70.).

Also, most pollutants do not cause their harmful effects on the environment on their own. For example, gases from a factory may not alone cause harm to the environment, as they are within the permissible values of pollution, but in combination they may cause harmful effects on the environment. In many cases of purely environmental damage, compensation is difficult to estimate. As in the case of compensation for the extinction of marine organisms as a result of the pollution of the sea by industrial waste.

Proof of environmental damage is also hampered by the inability of scientific knowledge to detect the harmful effect of the activity, substances or products in circulation that may be the cause of a particular damage (Ibid, pp. 70, 71, 72.).

Some people affected by pollution find it difficult to prove harm because the causal link cannot be established. They may not have been born when the pollution occurred because a long period of time passed before its effects on humans or property became apparent. The possibility of other factors contributing to the damage (Atta Saad Muhammad Al-Hawas, op. cit, pp. 514-515), as in the case of inherited damages that are only noticeable with the necessary analyzes and tests (Ahmed Abdel Tawab Muhammad Bahjat, p. 62).

All these difficulties faced by the injured party when proving the damage according to the traditional rules of civil liability. This has led to the enactment of legal texts that facilitate the task of proof and enable the injured to obtain compensation.

## **Section Two: Forms of Compensation for Environmental Damage from Industrial Pollution**

Civil liability for industrial pollution necessitates compensation. In most cases, actual restitution for environmental damage caused by industrial pollution is impossible, which obligates the judge to award monetary compensation. This section will address the forms of compensation for environmental damage resulting from industrial pollution, starting with actual restitution (First) and then monetary compensation (Second).

**First: Actual Restitution for Industrial Pollution Damage:** Actual restitution is considered the best way to compensate for damages, whether the injured party is an individual or a component of the natural environment, as long as it is feasible. It aims to restore the injured party to the state they were in before the damage occurred and to prevent future damage.

In many cases, actual restitution may not be possible due to certain impediments, in which case the judge must award monetary compensation. We will discuss actual restitution for industrial pollution damage by defining it, outlining its conditions, and identifying the impediments to awarding it.

**First-1- Definition of Actual Restitution:** The Algerian legislator has not defined actual restitution, either in the Civil Code or in the Environmental Protection Law within the framework of sustainable development, but it has indicated the possibility of awarding it (See Article 132 of the Algerian Civil Code). It refers to the restoration of the injured party to the state they were in before the damage occurred and preventing future harm whenever possible, by any means. Actual restitution can take several forms:

**\*Restoring the status quo ante:** This is mentioned as a penal and administrative penalty in various legal texts related to environmental protection (See Articles 2, 100, 102, 105 of the Algerian Environmental Protection Law within the Framework of Sustainable Development) but is not explicitly stated as a civil remedy. However, a civil judge may award it based on general principles that consider it a form of compensation (See Article 132 of the Algerian Civil Code.).

The Lugano Convention defines it as "any reasonable means aimed at rehabilitating and repairing environmental elements that have been damaged, as well as any means that lead to creating a state of balance if reasonably and feasibly applicable to the environmental elements (<https://coe.int/16800co79>, 2025)."

From this definition, it is evident that restoring the status quo ante is achieved when the means taken to repair damaged environmental elements are feasible and at a reasonable cost.

The definition outlined in the Lugano Convention for restoring the status quo ante takes two forms (Saeed Sayed Qandi, p. 31.):

1. Repairing the damaged environment: This involves actions to rehabilitate the damaged area.
2. Creating suitable living conditions similar to the damaged area when it is impossible to restore it to its original state. This can be achieved by establishing another area that offers the same living conditions as the damaged area.

However, creating an area with all the necessary life conditions is impossible because most damaged elements are natural and uniquely created by God Almighty. Therefore, it is impossible to create similar places for naturally damaged areas that cannot be restored to their original state.

The measures taken to restore the status quo ante must be reasonable (See Article 1, paragraph 8, of the Lugano Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment, held in Lugano on 06/21/1993. See the website). However, the Algerian legislator did not specify this condition when discussing restoration as a penal or administrative penalty but mentioned it concerning the principle of preventing the dangers of activities that may harm the environment (See Article 3, paragraphs 5,6 of the Algerian Environmental Protection Law within the Framework of Sustainable Development.).

The means do not have to be proportionate to the results, as the consideration is for the reasonableness of the measures, regardless of the result achieved (Atta Saad Mohammed Al-Hawas, op. cit, p. 854.).

However, this condition does not enable the injured party to obtain sufficient compensation to fully redress the harm suffered. If the means required to remove the damage must be "reasonable," this often leads to the failure to eliminate the effects of the damage and does not achieve the restoration of the state before the damage occurred. Removing the effects of environmental damage requires advanced methods and substantial costs due to the importance of natural environmental elements, as they are the essence of life. Thus, the evaluation of these elements may not be "reasonable," making the means to remove the effects of pollution also unreasonable. Therefore, it is justified to use the most advanced means available to remove the pollution's effects, regardless of their reasonableness, to ensure that natural environments are not left contaminated under the pretext that the means used for remediation are reasonable.

**\*Means to Prevent Future Environmental Pollution Damage:** The means that a judge may order to prevent future harm in cases of compensation for industrial pollution damage vary depending on the circumstances of each case. The judge may rule to modify the method of operating the polluting activity, such as prohibiting the activity during certain times, implementing measures to prevent or mitigate pollution, or removing the source of the damage by closing the facility if possible.

## **First-2- Forms of Compensation for Environmental Damage Caused by Industrial Pollution:**

In-kind compensation is considered the best method for compensating the injured party as it helps remove or at least mitigate the damage, especially when the harm involves natural elements essential to



life and indispensable to humans. However, in some instances, it may be challenging or impossible for the judge to award such compensation due to the presence of certain impediments, whether factual (First-2-1) or legal (First-2-2).

**First-2-1: In-Kind Compensation for Industrial Pollution Damage:** In-kind compensation is considered the best way to compensate the injured party, whether it involves an individual or an element of the natural environment, as long as it is possible. It achieves the goal of civil liability, which is to restore the injured party to the state they were in before the damage occurred and to prevent future harm.

**First-2-2: Factual Impediments to Awarding In-Kind Compensation:** These are material difficulties faced by the judge when deciding on the injured party's request to remove the effects of industrial pollution. They include:

**1- Economic and Social Importance of the Facility Causing the Damage:** If the facility's activities hold significant economic and social value for the community, it is necessary to maintain its operations to protect public interest. In such cases, the judge cannot order the cessation of the facility's activities and instead may award monetary compensation and mandate measures to reduce pollution (Atta Saad Mohammed Al-Hawas, *op. cit.*, p. 859.), as seen in cases where environmental harm affects neighbors due to noise from factory machinery.

**2- Disproportion between In-Kind Compensation and Environmental Damages:** The injured party's request for in-kind compensation may not be proportionate to the damages sustained by various environmental elements, particularly in the following scenarios:

- \* If the in-kind compensation methods are prohibitively expensive, leading to excessive financial burden and significant loss for the party responsible for the damage. In such cases, the judge may rely on expert testimony, which itself poses a material obstacle to awarding in-kind compensation (Geneviève Viney, *op cit.*, p200.).

- \* Regardless of the responsible party's losses, the damage to natural environmental elements is often more significant due to their essential nature. For example, marine pollution can result in the death of fish, a vital food and income source for humans. Additionally, the ecosystem can be disrupted due to the lack or absence of plants that absorb carbon dioxide through photosynthesis, leading to an increase in carbon dioxide levels and a decrease in oxygen levels essential for human life.

- \* If the harm caused to the responsible party by shutting down the facility is greater than the harm suffered by the injured party, the judge may not grant the injured party's request (Atta Saad Mohammed Al-Hawas, *op. cit.*, p. 864.).

- \* In cases where pollution leads to the extinction of living organisms or the destruction of non-renewable environmental resources, in-kind compensation becomes impossible (Hamida Jamila, p. 303.).

**Second-1-2: Legal Impediments to Awarding In-Kind Compensation:** It is represented in:

- \***Impossibility of In-Kind Compensation Due to the Nature of the Compensation Obligation:** In-kind compensation becomes impossible if it is not feasible, owing to the nature and extent of the obligation and the material means required for in-kind compensation (Abdul Razzaq Ahmed Al-Sanhouri, p. 868.). Compensation obligations arise upon the establishment and proof of damage. For instance, if an individual dies due to inhaling toxic gases emitted by a factory, in-kind compensation becomes impossible, leading the judge to award monetary compensation (Atta Saad Mohammed Al-Hawas, *op. cit.*, p. 866.).

Similarly, in cases where the damage is ongoing and cannot be eliminated, such as noise pollution from a factory causing discomfort to neighbors despite the implementation of all necessary measures to reduce or mitigate it, the judge may only award monetary compensation if shutting down the factory is not proportionate to the harm suffered by the injured party (Same reference., p. 868.).

In-kind compensation is also impossible when non-renewable environmental resources are destroyed, or rare or endangered species are lost. For example, 800 species of plants and animals, such as the great auk, short-finned pilot whales, Japanese sea lions, and gorillas, have been reported extinct due to pollution, with another 600 species at risk of extinction (Roland Séroussi, p33.).

\*Legal Impossibility of In-Kind Compensation for Environmental Pollution Damages: Legal obstacles can make in-kind compensation impossible in the following situations:

- If the responsible party refuses to implement the in-kind compensation order, which includes taking specific measures or precautions to prevent or mitigate environmental damage, despite being fined. In such cases, the judge may award monetary compensation instead (See Article 175 of the Algerian Civil Code).

- In urgent situations where the injured party executes the in-kind compensation order themselves, based on a court authorization, the responsible party is required to fulfill their compensation obligation monetarily (See Article 170 of the same law.). An example would be legally authorized environmental protection organizations removing pollutants from marine environments caused by factory waste discharge to prevent harm to marine life, making the factory operator responsible for monetary compensation.

- If the judge orders a cessation of certain activities and the responsible party fails to comply, monetary compensation must be awarded (See Article 173 of the same law.). For instance, if a factory owner fails to stop disturbing the residents with noise from production machinery, the judge must award monetary compensation.

Thus, in-kind compensation is impossible if it is naturally unfeasible, such as when the injured party cannot remedy the damage themselves, or the damage is ongoing and cannot be effectively prevented. This can include cases of death, loss of a human body part, or the destruction of endangered species due to pollution. Additionally, legal barriers such as the debtor's refusal to fulfill their obligation or damage resulting from public facilities also necessitate awarding monetary compensation.

**Second - Monetary Compensation:** Judges resort to monetary compensation when in-kind compensation is impossible or not requested by the injured party. They have discretionary power to determine the method of monetary compensation based on the circumstances of each case. This compensation can take the form of a lump sum payment or installments. Monetary compensation for environmental damage caused by industrial pollution covers injuries to persons (such as death, permanent or temporary total or partial disability, and all expenses incurred by the injured party due to the injury) or property (including damage to real estate, movable property, or various animals) or emotional distress (such as psychological pain and grief arising from physical injury, congenital deformity, or death).

The assessment of monetary compensation for harm to individuals, their property, or emotional distress follows general rules applicable to monetary compensation. However, there is a divergence in legal scholarship regarding the valuation of monetary compensation for damage to the natural environment, due to its unique characteristics. The natural environment is considered a shared heritage of humanity and is not easily quantifiable in monetary terms.

**Second -1 - Monetary Compensation for Private Damage:** Private damage refers to industrial pollution harm that affects individuals. Compensation for this type of damage adheres to the principle of full compensation. This principle entails compensating for direct damage, including actual losses incurred and lost profits, as well as non-material harm, such as emotional distress (Mohamed Shena Abu Saad, p48.).

There are numerous judicial precedents in comparative law where courts have awarded monetary compensation for environmental damage based on this principle. For instance, the Bastia High Court in France ordered an Italian company responsible for pollution to compensate for all damages caused by dumping toxic waste, known as red mud, into the sea off the coast of Corsica. This pollution led to

marine environmental damage due to ocean currents, affecting both the immediate marine environment and open waters. The resulting harm included disrupted fishing activities, decreased property values along the coast, a decline in tourism, loss of local tax revenue, and reduced fish catches (Referred to in Nabila Ismail Raslan, p97.).

In assessing monetary compensation for environmental damage, the Bastia High Court focused on the loss of potential earnings for the affected individuals. Fishermen, unable to engage in their trade due to the death of fish from marine pollution, lost income opportunities. Similarly, the flight of tourists deprived hotel and restaurant owners on the coast of potential profits.

Thus, the assessment of monetary compensation for private environmental damage is based on two main factors: the actual harm suffered and the lost potential earnings.

This principle is not subject to the principle of full compensation when assessing the environmental damage caused to human beings, which the judge takes into account when assessing compensation.

Compensation for breach of contractual obligations, which includes damage foreseeable at the time of contracting, but not unforeseeable damage.

The legal compensation set by the legislature is capped regardless of the principle of full compensation.

The compensation that the state is obligated to pay to those who have suffered bodily harm, but not the rest of the damages if the person responsible for them is not known.

**Second - 2 - Monetary Compensation for Pure Industrial Pollution Damages:** The natural environment consists of natural elements such as water, air, soil, and various natural resources created by God, which adhere to an integrated ecological system. These elements are provided by God to serve humanity and meet its needs, which gives them characteristics that distinguish them from artificial elements created by humans.

These characteristics include:

- Common Ownership: The natural environment is considered a shared heritage of humanity, which makes it challenging to assess monetary compensation for pure environmental damages (Second - 2 -1), which motivated jurisprudence researchers to seek the means to estimate it (Second -2 -2).

**Second - 2-1 Difficulties in Assessing Monetary Compensation for Pure Environmental Pollution Damages:** These difficulties have delayed the recognition of pure environmental damage. Legal scholars have questioned how to value water pollution or beach contamination. For instance, when valuing a tree that has been destroyed, should we consider its role in the ecosystem, its aesthetic value, or the price of its timber (Ata Saad Mohammed Al-Hawas, op. cit, p913.)

The difficulty in assessing compensation arises when the damage to the environment cannot be monetized, such as air pollution, or is impossible to recover, such as the loss of a rare animal species due to pollution. Or it is impossible to recover, such as the loss of a rare animal species due to pollution.

Sometimes the judge or experts are unable to determine the damage to the natural environment. Especially in the field of oil pollution of the marine environment, on the grounds that the consequences are not yet known. The dangers to the organisms living in it are not known (Anwar Jumaa Ali Al-Tawil, op. cit, p554.).

The difficulty that the judge finds is how to assess the elements of the natural environment and the basis on which the assessment is made. In the case of seawater pollution, how is the damage assessed? Is it based on the destruction of the fish wealth in the sea, the value of the means that will be taken to clean the sea of polluting substances, the extent of the loss suffered by fishermen who make a living from fishing in the sea, or the loss of earnings resulting from the flight of tourists due to the pollution (Same reference, p557.).

Monetary compensation often fails to address the problem since most pure environmental damages are irreparable. This threatens the disappearance of the polluted natural element, adversely affecting the ecosystem, and ultimately impacting humans. All natural elements were provided by God for human benefit and the continuity of life on Earth. This explains why countries like Algeria have implemented protection measures for these elements, including imposing penalties for violations and establishing principles aimed at preventing pollution.

**Second - 2 - 2: Methods for Assessing Monetary Compensation for Pure Environmental Pollution Damages:** Several methods exist for assessing monetary compensation for pure environmental damages. The main methods include standardized assessment, lump-sum valuation, methods based on statistical and economic sciences, and setting maximum compensation limits.

1- Standardized Valuation for Pure Environmental Damage: This method is used when it is possible to award specific performance compensation. In such cases, the injured party may undertake the repair themselves, such as when a legally recognized environmental protection association cleans up marine pollution caused by factory waste.

This approach allows for the monetary valuation of natural resources and elements that do not originally have commercial value (Ata Saad Mohammed Al-Hawas, op. cit, p917.). It may be the best means of determining the value of damages if it restores the situation to its state before the pollution occurred.

However, it may not be possible to confirm that the restoration has indeed returned the environment to its pre-pollution state if the original condition is unknown. Additionally, it does not take into account that natural elements should be valued according to their ecological functions.

Despite these limitations, this method is considered a good way to estimate compensation as it aims to eliminate the effects of damage in the future, resulting in a pollution-free natural environment.

2- Lump-Sum Valuation for Pure Environmental Damage: This method involves creating legal tables that set a standard value for natural elements, calculated based on scientific data provided by environmental specialists (Saeed Al-Sayed Qandil, op. cit, p. 42.). Several criteria are used for lump-sum valuation (Ahmed Abdel Tawab Mohamed Bahjat, op. cit, pp. 166-167.):

- Number of hectares: Valued in monetary units. Used for estimating compensation for forest damage.
- Contaminated cubic meter: Valued in monetary units. Used for assessing damage to marine environments due to oil pollution.
- Linear meter and cross-sectional square meter: Valued in monetary units. Applied to estimate damage to rivers and watercourses in length and width.
- Quantity of pollutant: Valued in monetary units. Used for damage assessment of seas and rivers due to oil pollution, based on the amount of oil spilled.

This method, however, does not ensure restoration of the original state before the pollution occurred (Ata Saad Mohamed Al-Hawas, op. cit, p. 920.). The beneficiary of the compensation might accept the monetary amount without taking actions to restore the original condition. Some argue that this method is suitable for rare plant and animal species or non-renewable resources (Abdullah Turki Hamad Al-Ayyal Al-Taie, op. cit, p. 167.).

This approach does not consider the state of the environmental element before pollution or its importance. It provides a monetary value for each natural element regardless of its actual significance.

3- Methods Based on Statistical and Economic Sciences: Some legal scholars suggest that natural environmental elements can be valued monetarily based on the results of statistical and economic sciences (Ata Saad Mohamed Al-Hawas, op. cit, p. 920.). Several theories have emerged to determine the valuation of environmental elements:

- Market Value Calculation: There are two methods for calculating the market value of natural elements (Anwar Juma Ali Al-Tawil, op. cit, p. 563.):

1. Based on the actual utility value, which represents the benefit it provides to humans, measured by the real estate value of these elements, considering expenses incurred for pollution removal or improvement.

2. Based on the potential future utility, sometimes referred to as opportunity cost. However, market value does not capture the full environmental value of natural elements. Some environmental elements, such as air and seawater, do not have a market value.

\*Non-Market Value Calculation: Natural environmental elements derive their value simply from their existence. This can be estimated based on what individuals are willing to pay for their presence, regardless of their use. This is achieved through surveys and statistical methods conducted by economic experts (Same reference., p. 564.).

This method is based on the subjective estimation of different segments of society regarding the affected natural element. Consequently, some individuals may not be able to determine the value they are willing to pay for its presence in the environment if they are unaware of its importance. This is similar to the case of protected species; if a person does not understand the significance of preserving protected species as a shared heritage, they cannot ascertain what they would be willing to pay for their existence.

\*Calculating the Productive Value of the Damaged Natural Element: This method is based on the actual productivity of the damaged natural element. It is used to estimate pollution in the marine environment, where compensation for those affected by pollution in their fishing areas is calculated based on the production of a quintal of fish (Ata Saad Mohamed Al-Hawas, op. cit, pp. 921-922.). However, the impacts of marine pollution are not limited to fish; there are other organisms that are also affected. Therefore, fish productivity cannot be relied upon to determine the value of compensation for the damage caused by marine pollution.

\*Calculating the Equivalent Value of the Affected Natural Element: This process is based on ecological balance and the economic value of the loss caused by the loss of the natural element, aiming to provide an equivalent alternative for the damaged element (Anwar Juma Ali Al-Tawil, op. cit, pp. 566-567.). Not all natural elements can accept an equivalent replacement. Animals and plants that are facing extinction do not have an equivalent alternative.

4 - Capping Compensation for Environmental Pollution Damage: This is referred to as the limited liability system, which aims to set a maximum amount of compensation that can be awarded when pollution occurs due to a specific activity, regardless of whether it leads to reparations or not. There may be damages that are not covered by this compensation, which the affected parties must bear (Yasser Mohamed Farouk Al-Minawi, op. cit, p. 419.).

All specific methods of compensation for purely environmental pollution damage view environmental elements as economic values that are part of the production process. However, their environmental value is greater than that; they are part of the ecosystem, and any damage to one of their elements leads to an imbalance in ecological balance, which necessarily reflects on their economic value. Therefore, compensation in kind is considered the best way to remedy purely environmental damage when possible.

## Conclusion

The subject of this research, concerning compensation for industrial pollution damages in Algerian legislation, has not been specifically addressed by the legislator within the framework of environmental protection laws and sustainable development due to its recent nature. This presents several challenges. I have chosen a significant issue: How is compensation for industrial pollution damages addressed in Algerian legislation?

Following discussion and analysis, I have reached the following conclusions and suggestions:

### Firstly: Findings

1. Industrial pollution damages affect natural environmental elements, referred to as pure environmental damages, and can also impact humans and their property, known as direct environmental damages.
2. Civil liability for industrial pollution leads to compensation. In principle, specific performance (restoration) is considered the most appropriate form of compensation for this type of liability because natural elements are essential to life.
3. Specific performance can take various forms, including restoring the situation to its pre-pollution state. However, the Algerian Environmental Protection Law within the framework of sustainable development does not explicitly provide for this as a civil remedy, but rather as a penal and administrative sanction.
4. Courts may resort to monetary compensation if it is not requested by the injured party, if specific performance is impossible (e.g., when the injured party must repair the damage themselves, or if the damages are ongoing), or if there is no way to repair the damage (e.g., death or loss of a human limb, or extinction of a species due to pollution), or if the debtor refuses to fulfill their obligation or the damage arises from public facilities.
5. Most environmental damages affecting humans and their property are considered indirect. This often places them outside the scope of compensable damages. Algerian legislation has recognized the legitimacy of compensation for indirect environmental damage by allowing legally accredited environmental associations to claim compensation for all types of environmental damage, provided that the damage results from violations of environmental protection laws. Claims are rejected if they do not meet this requirement.
6. Compensation for specific environmental damages generally adheres to the principle of full compensation, with exceptions for damages related to contractual breaches (covering only foreseeable damages at the time of the contract), legal compensation limits set by the legislator, and state obligations for physical harm where the responsible party is unknown.
7. Natural environmental elements are considered common property, making it difficult to assess their monetary value. They are often non-renewable or incommensurable with money. This has led scholars to seek methods for valuing such damages.
8. All methods for compensating pure environmental damages view environmental elements as economic assets within production processes. However, their ecological value is more significant, as any damage disrupts ecological balance, which impacts their economic value.

### Secondly: Suggestions

The Algerian legislator should amend Article 37 of the Environmental Protection Law within the framework of sustainable development regarding the rights of legally accredited environmental associations to claim compensation for environmental damages. The amendment should remove the requirement that the damage be the result of violations of environmental protection laws, allowing accredited associations to seek compensation for all types of direct and indirect environmental damages. The revised text could be:

"Legally accredited associations may exercise the rights recognized for civil parties concerning events causing direct or indirect harm to the collective interests they aim to defend."

### List of sources and references:

#### I: Sources:

- 1- Ordinance No. 75-58 on the Civil Code of 26/09/1975, *Official Gazette*, No. 78, issued on 30/09/1975, amended and supplemented by Law No. 07-05 of 13/05/2007, *Official Gazette*, No. 31, issued on 13/05/2007.
- 2- Law No. 03-10 *relating to the protection of the environment in the framework of sustainable development*, issued on 07/19/2003, *Official Gazette*, No. 43, issued on 07/20/2003.

#### II: References in Arabic

- 1- Books

- 1- Ahmed Abdel Tawab Mohamed Bahgat, *Civil Liability for the act harmful to the environment*, first edition, Dar Al-Nahda Al-Arabiya, Cairo, 2008.
- 2- Ahmed Mahmoud Saad, *An extrapolation of the rules of civil liability in environmental pollution disputes*, first edition, Arab Renaissance House, without place of publication, 1994
- 3- Ahmed Medhat Islam, *Pollution is the Problem of the Age*, World of Knowledge, Kuwait, 1978.
- 4- Anwar Gomaa Ali Al-Tawil, *The case of civil liability for environmental damage (a comparative study)*, Dar Al-Fikr and Law, Mansoura, 2014.
- 5- Belhaj Larbi, *The General Theory of Obligation in the Algerian Civil Code*, Part II (Legal Fact), Fourth Edition, Diwan of University Publications, Algeria, 2007.
- 6- Jamila Hamida, *The legal system of environmental damage and its compensation mechanisms*, Dar al-Khaldounia, Algeria, 2011.
- 7- Hassan Ali Al-Duraidi and Karima Abdul Rahim Al-Taie, *International Responsibility for Environmental Damage during Armed Conflicts*, first edition, Dar Wael, Jordan, 2009.
- 8- Hassan Ali Al-Dhanun, *Al-Mabsut in Civil Liability*, Part I (Damage), first edition, Wael Publishing House, Jordan, 2006.
- 9- Raif Mohammed Labib, *Procedural protection of the environment from monitoring to prosecution (a comparative study)*, first edition, Arab Renaissance House, Cairo, 2009.
- 10- Said Saad Abdel Salam, *The Problem of Compensation for Environmental Damage Technology*, Arab Renaissance House, Cairo, without year of publication.
- 11- Said Al-Sayed Kandil, *Mechanisms of Compensation for Environmental Damages*, New University House, Azarita, 2004.
- 12- Abdul Razzaq Ahmed Al-Sanhouri, *Al-Wasit fi Sharh al-Qanun al-Jadid al-Madani al-Nadid*, Part II (Al-Ithbadh - Effects of Commitment), third edition, Manchurat Halabi al-Huqawiyya, Beirut, 2009.
- 13- Abdullah Turki Hamad al-Ayal al-Taie, *Environmental Damage and Compensation in Civil Liability*, first edition, Halabi Law Publications, Beirut, 2013.
- 14- Atta Saad Mohammed Al-Hawas, *Civil Liability for Environmental Pollution Damage in the Neighborhood (a comparative study)*, New University House, Azarita, 2011.
- 15- Fellali Ali, *Obligations (the act entitled to compensation)*, second edition, Moufem Publishing, Algeria, 2010.
- 16- Mohamed Elsayed Elfeki, *Liability and Compensation for Marine Pollution Damage by Hydrocarbons*, first edition, Halabi Law Publications, Beirut, 2001.
- 17- Mohamed Shana Abu Saad, *Judicial Compensation, Penal Clause and Legal Interests*, New University House, Alexandria, 200.
- 18- Mustafa Al-Awaji, *Civil Law, Part II (Civil Liability)*, Fourth Edition, Halabi Law Publications, Beirut, 2007.
- 19- Nabila Ismail Raslan, *Civil Liability for Environmental Damage*, New University House, Alexandria, 2007.
- 20- Hala Salah Yassin Al-Hadithi, *Civil Liability for Environmental Pollution*, Juhayna Publishing, Amman, 2012.
- 21- Wannas Yahya and others, *The legal treatment of contaminated sites in Algerian legislation*, first edition, Dar Al-Kitab Al-Arabi, Algeria, 2014.
- 22- Yasser Mohamed Farouk Al-Minawi, *Civil Liability for Environmental Pollution*, New University House, Azarita, 2008.

## **2- Theses and memoirs:**

### **2.1- Theses:**

- 1- Ben Orabi Abdelkrim, *Contribution to the study of some indicators of environmental pollution in the industrial area of Taghrat (southeastern Algeria)*, PhD thesis, Faculty of Mathematics and Material Sciences, Kassidri Merabah University, 2023, p. 22.
- 2- Hassanouna Abdelghani, *Legal protection of the environment in the framework of sustainable development*, PhD thesis (private law), Faculty of Law, University of Biskra, 2012-2013.
- 3- Wannas Yahia, *Legal mechanisms for environmental protection in Algeria*, PhD thesis (public law), Faculty of Law, University of Tlemcen, 2007

**2-2- Memoirs:**

- 1- Foghali Halima, *France's international responsibility for polluting the environment as a result of nuclear tests in Algeria*, Master's thesis (Public Law), Faculty of Law and Political Science, University of Setif-2, 2016-2017.

**3- Websites:**

- 1- Said Salem Jouili, Confronting environmental damage between prevention and treatment.  
www.statimes.com
- 2- Lugano Convention on Civil Liability for Damage Resulting from Dangerous Activities.  
<https://coe.int/16800c079>

**Third- References in foreign language:**

- 1- Geneviève Viney, L'affirmation d'un "droit d'environnement" et réparation des dommages environnementaux, Lextenso édition, Tome 42, Paris, 2010.
- 2- Roland Séroussi, Droit International de l'environnement, Dunond, Paris, 2012.