

The Concept of Natural Disasters and Ways to Enhance Prevention and Mitigation in Light of the Provisions of Law No. 24-04

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Abstract:

Natural disasters are naturel phenomena with a negative repercussion, these disasters vary according to disasters of a climatic nature, disasters of a tectonic nature, or disasters of a biological nature. Algeria today is making efforts, like other countries around the world to implement an arsenal of legal and regulatory texts to the potential dangers of these disasters, this is according with the provisions of law number 24-04 of February 26th/2024. with relates to preventing and reducing the risks of natural disasters within framework of sustainable development, which included 18 natural disasters, It determined the tasks assigned to each sector to reduce these disasters so that Algeria as a country on the path of growth would be able to confront these disasters.

Keywords: Natural phenomena; Disasters of a climatic nature; Disasters of a tectonic nature; Disasters of a biological nature; to prevent the potential dangers of natural disasters.

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Introduction:

Natural disasters are the primary cause of chaos that spreads rapidly among populations, especially when significant human and material damages are involved. Humanity has witnessed numerous environmental disasters across various industrial fields. However, some catastrophes have been the result of human activity, such as the Bhopal disaster in India, also known as the "Union Carbide Disaster." This is considered one of the worst industrial disasters in human history, claiming the lives of thousands of residents in the city of Bhopal, central India, and neighboring areas. On the evening of December 2, 1984, approximately 30 tons of the deadly gas "methyl isocyanate" leaked into the air from a pesticide factory owned by the American company Union Carbide.

Another example is the Chernobyl disaster, one of the most severe nuclear radiation accidents in history. It occurred at the Chernobyl Nuclear Power Plant near the city of Pripyat in northern Soviet Ukraine on April 26, 1986. This catastrophic event happened when nearly 200 employees were working in the nuclear reactor. The disaster was caused by an operational error during the shutdown of water turbines used to cool uranium, which resulted in overheating of the uranium in Reactor No. 4 and led to an explosion. Within seven seconds, the temperature rise caused a chemical explosion that released approximately 520 radioactive isotopes into the atmosphere, making it the largest nuclear disaster the world has ever witnessed.

The environment becomes a victim of various types of attacks, some caused by natural phenomena such as hurricanes, earthquakes, volcanoes, and floods, while others are entirely human-induced. Humans are often the primary cause of events like wars, explosions, chemical and nuclear leaks, which frequently result in losses of life and property that exceed the possibility of compensation or repair.

Algeria, like other countries around the world, is also exposed to disasters, whether due to human activity or natural causes. Therefore,

establishing rapid intervention systems and structures in the event of any danger or disaster is crucial to prevent chaos and expedite rescue efforts. This requires developing a comprehensive plan that accounts for all potential hazards or disasters, their locations, and methods of implementation while respecting the procedures outlined in the plan.

Such measures do not arise spontaneously but are governed by laws that specify how to develop intervention plans and determine the personnel and resources, both material and human, to manage the aftermath of these risks. The Algerian legislator strives to adapt to these requirements by relying on various studies that examine these disasters to establish standards for facing any threats to the population and property. This is the focus of our study, through which we aim to address the following key question:

How has the Algerian legislator dealt with risk and natural disaster management based on the provisions of Law No. 24-04, which includes the rules of prevention, intervention, and mitigation of disaster risks within the framework of sustainable development?

This study requires us to adopt an analytical approach, focusing on analyzing specific provisions of the law, which identifies eighteen (18) catastrophic risks and defines sectoral responsibilities in disaster risk reduction. To address this topic, the research is divided into two main axes. The first axis examines the conceptual framework of natural disasters, while the second axis addresses the legal framework for these disasters and methods to mitigate them. The study concludes with a summary containing the key recommendations and proposed solutions.

Axis One: The Conceptual Framework of Natural Disasters

Natural disasters are defined as natural phenomena with severe and dramatic consequences (including loss of life, whether human or other living organisms, material damages, etc.), accompanied by climatic changes, geophysical-morphological transformations, or impacts on ecosystems or biodiversity.

Despite the difficulty in classifying these phenomena due to their diversity (earthquakes, landslides, volcanic eruptions, floods, storms,

hurricanes, fires, epidemics, etc.), they are often categorized as geological, climatic, biological, or environmental disasters. These events can range from highly localized occurrences to widespread phenomena with international ramifications. They may also be instantaneous or prolonged, lasting months or even years, causing thousands of casualties.

In this axis, we aim to provide a precise definition of natural disasters and identify their types as follows¹:

First: Definition of Natural Disasters

The definition of natural disasters varies according to numerous international and national organizations and specialized bodies, including:

1. United Nations:

A natural disaster is a devastating situation that abruptly disrupts daily life patterns, leaving people in need of protection, clothing, shelter, medical care, social support, and other essential necessities².

2. International Civil Defense Organization:

A disaster is an unexpected event caused by natural forces or human actions, resulting in loss of life and property destruction. It has a severe impact on the national economy and social life, exceeding the capacity of national resources to address the situation, and therefore requires international assistance³.

¹ Dr. Samira Bishara, "Managing Major Risks: A Study of the Algerian Experience," Journal of Humanities and Social Sciences, Issue 4, 2020, without page numbers, Djilali Liabès University, Khemis Miliana, Algeria.

² A review of the definition of the United Nations Office for Disaster Risk Reduction (UNDRR) in December 1999 to ensure the implementation of the International Strategy for Disaster Reduction under General Assembly Resolution 219/54, which is part of the United Nations Secretariat, supporting the implementation and review of the "Sendai" Framework for Disaster Risk Reduction adopted by the Third UN World Conference on Disaster Risk Reduction.

³ A review of the definition of natural disasters issued by the International Civil Protection Organization, an international organization based in Geneva, concerned with protecting and assisting countries in developing systems to provide protection and aid to populations, especially in light of the wars and natural disasters occurring worldwide. This organization was established in 1931.

3. Industrial Civil Defense Guide:

A disaster is a major incident causing significant loss of life and property. It may stem from natural causes (floods, earthquakes, storms, etc.) or human actions (intentional or accidental negligence). Addressing such disasters requires the mobilization of all national resources (both governmental and civil) or international aid if national capabilities are insufficient⁴.

4. The American Society of Safety Engineers defines a disaster

as a sudden, unexpected disruption in the normal way of life caused by natural phenomena or human actions, resulting in numerous injuries, fatalities, and significant material losses.

It is also defined as a sudden incident causing massive damage to lives and property, with its effects extending beyond the affected area or community⁵.

In general, natural disasters are natural phenomena with severe consequences, often accompanied by climatic changes, physical or morphological transformations, impacts on biological environments, or effects on the ecosystem as a whole.

They are destructive events caused by natural phenomena such as earthquakes, volcanoes, floods, and hurricanes. These events are characterized by their ability to inflict significant harm to people, property, and the environment.

The severity of natural disasters varies from one event to another, depending on numerous factors such as the event's intensity, location, and the population's preparedness. They often result in extensive losses, as

⁴ A review of the definition of natural disasters by the Industrial Civil Defense, which has nearly the same scope of responsibilities as the International Civil Protection Organization regarding natural disasters.

⁵ A review of the definition of natural disasters by the American Safety Engineers Organization (OSHA), founded in 1911.

previously mentioned, and require substantial efforts for reconstruction and assistance to affected populations.

Second: Types of Natural Disasters

Natural disasters can be categorized as follows:

A. Disasters of climatic origin:

These occur due to climatic factors and include:

- **Local floods**
- **Snowstorms**
- **Wildfires** resulting from hurricanes and droughts

These disasters are marked by winds laden with high humidity, blowing at speeds between 120 and 300 km/h. One of the most notable storms occurred in 1999 in France, which uprooted 300 million trees and destroyed 70% of the national wood reserves, in addition to causing numerous fatalities, particularly in forests.

Another example is **Hurricane Mitch** in 1998, classified as a category-five hurricane. It devastated Honduras, Nicaragua, Guatemala, El Salvador, the Yucatan Peninsula, and southern Florida between October 22 and November 9, 1998. The hurricane caused floods, landslides, and over 325 fatalities due to winds and waves in Florida, Honduras, and Nicaragua.

In other regions, destruction was primarily caused by rain, which led to the collapse of half the hills and mountains in Honduras, Nicaragua, and El Salvador. Hurricane Mitch demonstrated the devastating power of hurricane rains, ranking as one of the deadliest maritime hurricanes, with an unparalleled number of casualties and injuries.

In Algeria, one of the most notable floods was the infamous "Black Saturday" flood, which swept through the capital on November 10, 2001, in the district of "Bab El Oued." This flood was caused by torrential rains that resulted in raging torrents, destroying homes and displacing entire families. The disaster claimed numerous lives as victims were swept into the sea; some bodies were recovered, while others remain missing to this day.

This catastrophic flood claimed the lives of more than 800 people within just 120 minutes, making it one of the deadliest rainfalls Algeria had experienced since the 1940s, according to meteorological experts⁶.

B. Disasters of Tectonic Origin

These disasters occur due to geological factors related to the Earth itself. The most prominent examples include **earthquakes** and **volcanic eruptions**.

Earthquakes are among the most devastating natural disasters. An earthquake can be defined as a sudden and rapid shaking of the Earth caused by the movement of tectonic plates. One of the most infamous disasters of this type is associated with the "Ring of Fire," known for its history of destructive earthquakes and volcanoes.

The **Great Chile Earthquake** stands as the most powerful earthquake ever recorded, with a magnitude of 9.5 on the Richter scale. This earthquake caused widespread destruction, significant loss of life, and had far-reaching local and global impacts. It triggered a massive **tsunami** that swept across Chilean coasts and affected distant regions such as Hawaii, Japan, and the Philippines. This catastrophe resulted in the death of nearly 6,000 people, the displacement of millions, and extensive destruction of infrastructure.

Volcanic eruptions, on the other hand, are exemplified by the catastrophic eruption of Mount Tambora on the island of Sumbawa, then part of the Dutch East Indies (modern-day Indonesia). This event marked one of the most devastating volcanic eruptions in history. Surrounding regions experienced a series of explosions and earthquakes, followed by a massive eruption.

The blast was so powerful that areas over 1,000 miles away felt its effects, and the sound of the explosion reached as far as Sumatra, about 1,600 miles from Mount Tambora. The eruption expelled an enormous

⁶ Dr. Awatef Charef Al-Harith, "Lectures on Natural Disasters and How to Face Them," Professor of Environmental Studies - Biogeography - Department of Geography and Geographic Information Systems, Faculty of Arts and Humanities, Kingdom of Saudi Arabia, 2017.

amount of lava, ash, and volcanic rocks, devastating nearby villages. With an eruption strength rated at 7 on the Volcanic Explosivity Index, it caused the death of 12,000 residents of Sumbawa Island. In the months that followed, 80,000 more people in nearby regions perished due to famine caused by the eruption's aftermath.

Algeria has also experienced significant tectonic disasters. The most notable earthquake in the country's history was the **Chlef Earthquake**. The region of Chlef (formerly known as El Asnam) has a history of seismic activity due to its location along the Mediterranean seismic belt.

On **October 10, 1980**, a devastating earthquake struck the area, registering a magnitude of 7.3 on the Richter scale. The earthquake caused massive destruction, killing thousands and causing extensive damage to infrastructure⁷.

C. Biological Origin Disasters:

The most famous biological disaster humanity has experienced is the "Coronavirus" disease, or "COVID-19," also known as the severe acute respiratory disease associated with the coronavirus, which spreads primarily through contact with infected individuals via coughing, breathing, or sneezing, among other means. This pandemic was first discovered in the Chinese city of Wuhan in 2019 and has since spread worldwide, leading to the global Coronavirus pandemic. It caused a global impact on the movement of people and the economy. The International Air Transport Association (IATA) predicted that the global aviation sector would lose \$113 billion, and oil prices hit their lowest levels in over four years due to concerns among investors about reduced demand. China, the world's largest importer of crude oil, with a rate of 10 million barrels, is also the second-largest consumer of oil, consuming an average of 13 million barrels per day. The International Energy Agency predicted that oil demand would recover for the first time since the financial crisis of 2009, with a return of 430,000 barrels per day. This virus continued its devastating journey,

⁷ Khalaf Hussein Al-Dulaimi, "Natural Disasters and Mitigating Their Effects," Master's Thesis, 2009, Amman, Jordan, Dar Al-Safa for Publishing and Distribution, p. 225 and beyond.

causing more than 5 million deaths globally. In Algeria, like other countries, unprecedented rates of coronavirus infections were recorded, with daily deaths around 50. The total number of coronavirus-related deaths in Algeria exceeded 4,161⁸.

Second Axis: The Legal Framework for Natural Disasters and Ways to Mitigate Them

Like other countries, Algeria strives to establish legal and legislative frameworks for preventing and mitigating natural disasters. This was confirmed by the Ministry of Interior, Local Communities, and Urban Planning, which emphasized that public authorities have adopted a new strategy to face the risks of major disasters, based on some recommendations in the diagnostic report on disaster management in Algeria, prepared in collaboration with the World Bank. The strategy includes adopting proactive actions, early warning systems, and preparedness and readiness measures before a disaster occurs, especially under Law No. 24-04. This law addresses the following⁹:

First: The Content of Law No. 24-04:

The Ministry of Environment and Renewable Energy is working to address the challenges posed by climate change by preparing and developing a national strategy aimed at reducing natural disasters. The Minister of Environment and Renewable Energy recently confirmed that the expenses for managing floods and forest fires over the past 15 years in Algeria amounted to approximately \$255 million annually, 70% of which was for floods. This new approach in Algeria's strategy to manage natural disaster risks was adopted based on the commitments made by President "Abdelmadjid Tebboune" during his election campaign, which focuses on protecting citizens, their properties, and ensuring environmental safety.

⁸ Habib Abdullah Ahmed Abu Zaid, "Natural Disasters," Master's Thesis in Business Administration, Faculty of Commerce, Islamic University, Gaza, Palestine, 2015, p. 10, also see: Fares Al-Ahmadi, "Effects of Natural Disasters on Humans and Health," Journal of Human Health, University of Riyadh, Kingdom of Saudi Arabia, p. 240, 2021.

⁹ Sharif Souria, "The Legal Framework for Managing Natural Disasters in Algeria," Professor Researcher Journal for Legal and Political Studies, December 19, 2017, Mohamed Lamine Debaghine University, Setif 2, Algeria, p. 366 and beyond.

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This is part of the legal and regulatory framework to address various risks, foremost among them Law No. 24-04, dated February 26, 2024, which contains rules for the prevention, intervention, and mitigation of natural disaster risks within the framework of sustainable development. This law includes 18 types of catastrophic risks and defines sectoral responsibilities in disaster risk reduction. It also introduces many measures to address major disasters, such as periodic revisions of laws and regulations, including the earthquake management system, as well as the establishment of the national network of research laboratories on major disaster risks within the Directorate General of Scientific Research at the Ministry of Higher Education and Scientific Research, along with other specialized bodies¹⁰.

Second: Ways to Enhance Algeria's Resilience to Natural Disasters

Law No. 24-04, dated 16 Sha'ban 1445 (February 26, 2024), which includes rules for the prevention, intervention, and mitigation of disaster risks in the context of sustainable development, specifies various methods of disaster prevention. Article 14 of the law states: "A national scientific research and technological development program for disaster risks shall be established within specialized research bodies in this field."

Article 17 highlights specialized bodies and institutions for the prevention, intervention, and mitigation of natural disaster risks, in cooperation with economic operators, private entities, and civil society participation. The second section of the law outlines special provisions for the prevention of each natural disaster¹¹.

According to a recent joint study by the World Bank and the National Risk Management Office, which identifies priority measures that could

¹⁰ A review of the content of Law No. 24-04, dated 16 Sha'ban 1445, corresponding to February 26, 2024, which includes the rules for prevention, intervention, and mitigating disaster risks in the context of sustainable development.

¹¹ Hussani Hussein, "Managing Natural Disaster Risks in Algeria: Reality and Prospects," Academic Journal of Social and Human Studies, Department of Economic and Legal Sciences, Issue 11, January 2014, p. 36.

enhance Algeria's ability to face future climate and natural disaster risks, titled "Assessment of Disaster and Climate Risk Management in Algeria," the study looks at the economic impact of disasters in the country and highlights both the strengths and weaknesses in Algeria's current efforts to manage risks¹².

As previously mentioned, the Algerian government estimates the annual budget for addressing floods, earthquakes, and forest fires over the past 15 years to be around \$255 million (35.14 billion Algerian Dinars), with approximately 70% of this amount allocated for flood management.

The results of this study emphasize the need to strengthen disaster risk management in Algeria and offer recommendations that outline priority areas of action, which can guide government interventions and stimulate support from development partners.

Law No. 24-04 also aims to strengthen the material and human capabilities of the various institutions responsible for disaster prevention and management, including the General Directorate of Civil Protection, the Research Center in Astronomy, Astrophysics, and Geophysics, and the National Center for Applied Research in Seismology¹³.

Conclusion

In conclusion, based on what has been discussed in this introduction, it can be said that natural disasters continue to pose a barrier to development in Algeria to this day. Despite Algeria having relevant legislation, the effectiveness of its civil defense in managing natural disasters remains very limited. This is mainly due to the ongoing focus on post-crisis response, rather than prioritizing risk assessment beforehand.

Therefore, we propose the following recommendations:

¹² A review of the joint study between the World Bank and the National Delegation for Natural Risks, which outlines priority actions that can help strengthen Algeria's ability to face natural disaster risks in the future, scheduled for December 12, 2023.

¹³ Abed Said, "The Role of Civil Protection in Crisis and Disaster Management in Algeria," Algerian Research and Studies Journal, Issue 7, Volume 2, Faculty of Political Science and International Relations, Constantine 3 University, Algeria, 2017, p. 20 and beyond, also see: Jamal Hidar, "Disaster Management in Algeria," Master's Thesis in Political and Administrative Organization, Faculty of Political Science, University of Algiers 03, 2005, p. 43.

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1. Strengthening the legal system related to natural disasters with executive measures that allow for rapid intervention. While laws exist, there are no effective mechanisms to implement them.

2. Developing strategies to predict various natural disasters through cooperation between different agencies, especially security and military institutions, to ensure the safety and security of citizens.

3. Enhancing coordination between various directorates to face risks and benefiting from university expertise by establishing research laboratories and creating specializations in risk management.

4. Mandating insurance coverage for the risks and damages caused by natural disasters.

5. Promoting a preventive culture through awareness programs by organizing sessions and activating campaigns on local and national radio channels and national television to raise public awareness of the dangers of natural disasters.

6. Establishing strategic security stockpiles for post-disaster recovery at both local and national levels.

7. Issuing technical regulations regarding the use of construction materials to withstand the effects of natural disasters and reinforcing buildings by constructing reinforced concrete walls to enhance their durability.

8. Creating a base of joint committees between sectors at the local level to ensure the monitoring and implementation of disaster prevention plans.

9. Reviving international, regional, and local cooperation projects to promote disaster prevention and risk reduction through real technology transfer.

10. Developing effective governance plans based on legal and legislative measures through three phases:

- Phase 1: Pre-disaster phase: preparedness
- Phase 2: During the disaster: response methods and means
- Phase 3: Post-disaster phase: evaluation and lessons learned

11. Drawing lessons from leading countries in the field of managing major natural disaster risks.

References

1. Dr. Samira Bishara, "Managing Major Risks: A Study of the Algerian Experience," *Journal of Humanities and Social Sciences*, Issue 4, 2020, without page numbers, Djilali Liabès University, Khemis Miliana, Algeria.

2. A review of the definition of the United Nations Office for Disaster Risk Reduction (UNDRR) in December 1999 to ensure the implementation of the International Strategy for Disaster Reduction under General Assembly Resolution 219/54, which is part of the United Nations Secretariat, supporting the implementation and review of the "Sendai" Framework for Disaster Risk Reduction adopted by the Third UN World Conference on Disaster Risk Reduction.

3. A review of the definition of natural disasters issued by the International Civil Protection Organization, an international organization based in Geneva, concerned with protecting and assisting countries in developing systems to provide protection and aid to populations, especially in light of the wars and natural disasters occurring worldwide. This organization was established in 1931.

4. A review of the definition of natural disasters by the Industrial Civil Defense, which has nearly the same scope of responsibilities as the International Civil Protection Organization regarding natural disasters.

5. A review of the definition of natural disasters by the American Safety Engineers Organization (OSHA), founded in 1911.

6. Dr. Awatef Charef Al-Harith, "Lectures on Natural Disasters and How to Face Them," Professor of Environmental Studies - Biogeography -

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Department of Geography and Geographic Information Systems, Faculty of Arts and Humanities, Kingdom of Saudi Arabia, 2017.

7. Khalaf Hussein Al-Dulaimi, "Natural Disasters and Mitigating Their Effects," Master's Thesis, 2009, Amman, Jordan, Dar Al-Safa for Publishing and Distribution, p. 225 and beyond.

8. Habib Abdullah Ahmed Abu Zaid, "Natural Disasters," Master's Thesis in Business Administration, Faculty of Commerce, Islamic University, Gaza, Palestine. see: Fares Al-Ahmadi, "Effects of Natural Disasters on Humans and Health," *Journal of Human Health*, University of Riyadh, Kingdom of Saudi Arabia.

9. Sharif Souria, "The Legal Framework for Managing Natural Disasters in Algeria," *Professor Researcher Journal for Legal and Political Studies*, December 19, 2017, Mohamed Lamine Debaghine University, Setif 2, Algeria.

10. A review of the content of Law No. 24-04, dated 16 Sha'ban 1445, corresponding to February 26, 2024, which includes the rules for prevention, intervention, and mitigating disaster risks in the context of sustainable development.

11. Hussani Hussein, "Managing Natural Disaster Risks in Algeria: Reality and Prospects," *Academic Journal of Social and Human Studies*, Department of Economic and Legal Sciences, Issue 11, January 2014.

12. A review of the joint study between the World Bank and the National Delegation for Natural Risks, which outlines priority actions that can help strengthen Algeria's ability to face natural disaster risks in the future, scheduled for December 12, 2023.

13. Abed Said, "The Role of Civil Protection in Crisis and Disaster Management in Algeria," *Algerian Research and Studies Journal*, Issue 7, Volume 2, Faculty of Political Science and International Relations, Constantine 3 University, Algeria, 2017, p. 20 and beyond, also see: Jamal Hidar, "Disaster Management in Algeria," Master's Thesis in Political and Administrative Organization, Faculty of Political Science, University of Algiers 03, 2005.