

Journal of Geography, Politics and Society 2025, 15(1), 50–56 https://doi.org/10.26881/jpgs.2025.1.06



# EVALUATING ALGERIA'S APPROACH TO MAJOR RISK PREVENTION AND DISASTER RESPONSE

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## Citation

Tout F., Rebouh N., Dinar H., Benzid Y., Zouak Z., 2025. Evaluating Algeria's Approach to Major Risk Prevention and Disaster Response, *Journal of Geography, Politics and Society*, 15(1), 50-56.

## Abstract

The prevention of major natural and technological risks is crucial. Consequently, countries are developing comprehensive legal frameworks to address these challenges. Algeria is among the nations striving to enhance its legislation and regulations in this domain. Law No. 24-04, which encompasses rules for prevention, intervention, and disaster risk reduction within the framework of sustainable development, introduces several updates. However, it still lacks detail in certain areas and fails to address some aspects comprehensively. This paper critically examines these shortcomings. The research is based on a thorough review of scholarly discussions and the updates introduced by the law to bridge gaps in the previous legislation. The study suggests that the law requires revisions to include several additional aspects, such as a clearer definition of the concept of disaster, the inclusion of land-based pollution as a risk, and the consideration of risks arising from civil disturbances like conflicts, strikes, and sabotage. It also recommends provisions for large-scale and individual evacuations, particularly for people with special needs. The research highlights the need for better control of urbanization processes and the establishment of planning and construction standards for shelters. It underscores the importance of updating prevention plans with solid foundations and points out critical considerations for reviewing these plans. Additionally, the research advocates expanding international cooperation. Overall, this research aims to guide authorities in better regulating legal texts related to the prevention and management of major risks. It seeks to contribute to developing a legal framework that modernizes prevention plans and promotes sustainable development. This study is part of scientific efforts to help create a legal framework that leads to improved preventive measures and sustainable development

## Key words

Law, Prevention, Disaster, Risk, Algeria.

Received: 19 November 2024 Accepted: 17 January 2025 Published: 30 April 2025

## 1. Introduction

The prevention of natural and technological risks has become a fundamental obligation for many countries that have suffered from their impacts (das Dores de Jesus Da Silva et al., 2024; Gupta, Nair, 2012). These risks can lead to outcomes that are difficult to recover from or cause permanent damage under certain conditions. Consequently, countries make every effort to improve prevention measures (Siriwardhana et al., 2021).

Focusing on the legal framework for prevention can significantly aid in preparing communities and their institutions to handle various risks and reduce potential vulnerabilities (Aronsson-Storrier, da Costa, 2017; Widowati, 2022). This includes defining the responsibilities and tasks of all involved actors, as well as the necessary measures to prevent risks or mitigate their damage.

In Algeria, Law 24-04, which sets out the rules for prevention, intervention, and disaster risk reduction within the framework of sustainable development, and which repeals Law 04-20 concerning the prevention of major risks and disaster management, is the latest legislation addressing this issue. It emphasizes prevention as a key element of the state's policy in dealing with risks.

This new law clarifies and addresses many gaps and deficiencies in the previous law and introduces new aspects related to risk and disaster management. It can be considered a cornerstone for the issuance of regulatory decrees that will establish new rules to provide better security conditions in the face of risks.

One of the most significant features of this law is the clarification of key concepts related to risks and the inclusion of new risks not mentioned in the previous law. It also allows for the application of expropriation measures in areas exposed to natural hazards that pose a threat to individuals or property.

The law outlines the key levels on which the state's policy for managing major risks and resulting disasters is based. These levels primarily focus on three stages: before, during, and after the disaster. It also sets out principles for achieving this within the framework of continuous improvement and the global trend aimed at mitigating risks, ensuring preparedness, appropriate response, and disaster recovery (Tavakoli Taba et al., 2020).

Although Law 24-04 clarifies and addresses many aspects overlooked in Law 20-04, it still neglects certain areas and lacks detailed guidelines on others. This may limit its effectiveness or impact in the short, medium, or long term.

For instance, the law does not specify how local or international efforts and aid should be organized

during disasters, nor does it establish criteria for preparing, evaluating, or revising prevention and intervention plans, or the timeframe for doing so. Instead, it refers these matters to regulatory provisions. Article 25 of the law states that the sectors responsible for drafting, amending, and implementing the general plans for disaster risk prevention will be designated by regulatory measures.

The absence of regulatory texts that clarify these aspects raises questions about the importance of evaluating and reviewing prevention plans and the expected framework for organizing these evaluations and reviews.

In this research, we aim to discuss some of the key elements introduced by Law 24-04 compared to Law 04-20. We also explore other aspects that require more detail or inclusion in the law, and we aim to contribute to the development of a framework that allows for the evaluation and review of prevention plans.

## 2. Methodology

This research presents a partial critical analysis of Law 24-04, which encompasses rules for prevention, intervention, and disaster risk reduction within the framework of sustainable development, and which repeals Law 20-04 concerning the prevention of major risks and disaster management. The study begins by highlighting the key advantages of this law compared to its predecessor, while also addressing some shortcomings identified through a review of the laws of several countries that have made notable progress in this area, even if these aspects are not explicitly included in this research.

The study aims to clarify how this law integrates with various pre-existing laws and regulatory decrees that govern sectors directly related to achieving prevention and managing disasters, such as urban planning, environmental management, health, and waste management.

The research discusses specific details whose lack of regulation may directly hinder or prevent the benefits of this law, particularly concerning the review and modification of prevention plans. It also outlines potential issues arising from the failure to update these plans and the challenges related to defining a regular timeframe for doing so.

Rather than establishing new foundations for the law, the study seeks to develop a comprehensive legal framework that upholds the principles on which this law is based. It aims to provide better regulation of texts related to prevention, intervention, and

recovery, specifically addressing the updating of prevention plans to facilitate the programming of regular and exceptional evaluations, reviews, and updates. Ultimately, this approach aims to achieve higher levels of prevention.

## 3. Results and Discussion

Law 24-04, which includes rules for prevention, intervention, and disaster risk reduction within the framework of sustainable development, significantly enhances the legal framework established by the Algerian legislator to regulate risk prevention and address its impacts. It outlines the broad principles that should form the basis of the state's policy at both central and decentralized levels. Additionally, this law provides clearer definitions of concepts and introduces new types of risks, emphasizing the importance of prevention.

The law also addresses aspects that were not explicitly covered in the previous law, such as the responsibility for funding prevention operations. It clarifies that the state is responsible for all related activities, thereby removing ambiguity that has concerned both the public and private sectors (Kousky, Shabman, 2017). Furthermore, the law emphasizes fostering a community culture regarding risks by integrating this topic into all educational stages, which is crucial (de Rivera, 2022; Mafuko-Nyandwi et al., 2024; Tselios, Tompkins, 2020).

Moreover, the law stipulates that, in addition to mandatory insurance against risks, the state may provide financial or in-kind compensation to those affected by these risks. It establishes a consultation mechanism involving citizens and private stakeholders in the development or updating of prevention, intervention, and recovery plans, which is of great importance (Irshad, 2024; Waheduzzaman, As-Saber, 2015). It also lays the groundwork for cooperation between municipalities and states in risk management and disaster response, emphasizing the importance of training local elected officials.

The transition that the law seeks to achieve, from disaster management to preparedness and mitigation, represents a significant turning point (Siriwardhana et al., 2021; Tout, 2023). It redirects the stakeholders' focus towards achieving prevention and investing in it appropriately, rather than merely concentrating all efforts and resources on disaster management.

The integration achieved by this law with various sector-specific laws confirms the existence of a unified and comprehensive approach to management. For example, the law refers to prevention rules that comply with Executive Decree 09-399, which includes

regulations for flood risk prevention. It also references certain regulations regarding urban planning, particularly the prohibition of construction in hazard-prone areas, as seen in Law 04-05, which amends and supplements Law 90-29 concerning urban planning.

However, despite adding value to the prevention policy and disaster management, the law overlooks certain aspects that should have been addressed. Below are some elements that could significantly enhance this law.

The law needs to clarify further the concept of disaster and appropriately incorporate the concept of disaster preparedness (Siriwardhana et al., 2021). It should also clarify the criteria for declaring areas as disaster-affected to ensure greater ease in fulfilling responsibilities or obtaining rights for citizens, especially in relation to insurance and compensation.

Among the risks that may be included are those arising from civil unrest, such as riots, acts of vandalism, major transportation accidents, and significant ideological conflicts, among others.

The law mentions marine, air and water pollution, but does not refer to land pollution, which can be very dangerous in some cases and can cause both direct and indirect damage to the environment, human health, animals and plants. It can also cause irreparable damage, so it is important to pay attention to this aspect as well.

Current laws do not clarify the possibility of organizing training that simulate exposure to potential risks, which may prevent the actual framing of rescue operations and disaster management. Therefore, allowing this possibility may help prepare responders and citizens to better deal with emergency situations and avoid the disturbances that may accompany the process, ensuring a more effective intervention.

The reference to the possibility of expropriation could indeed reduce exposure to risks if the designation of these areas is based on a suitable assessment that accurately identifies locations that have been or may be at risk in the future. Therefore, it is crucial to emphasize the importance of adhering to urban planning laws to avoid the burdensome procedures required for expropriation. One fundamental demand is to provide more detail in specifying areas that may benefit from expropriation, ensuring that compensatory measures go to the rightful owners who were victims of poor assessment, thereby preventing exploitative attempts by some individuals. It should also be noted that construction bans can exempt certain structures, such as gardens, while simultaneously establishing minimum technical preventive requirements for the types of risks that necessitate such measures. This approach allows for special-purpose facilities that can adapt to certain levels of risks, which, by their nature or the nature and level of risk, do not pose a threat to people or property, considering the correct planning of land use.

Furthermore, it is essential to establish the determination of easements scientifically (Tout, 2023), subject to expert assessment for each type of risk, and to monitor their implementation rigorously, particularly in urban areas and concerning specific facilities.

One of the measures aimed at achieving preventive actions is the prohibition of connections to public networks in all areas confirmed to be at risk. This aspect is also overlooked by urban planning laws. Additionally, controlling urbanization processes is considered essential and urgent (Chao, Hsu, 2018). It is insufficient to rely solely on prohibiting construction within specific areas of cities; there should be a strong emphasis on managing urban expansion better, especially in cities highly threatened by risks, such as some major coastal cities, to avoid testing the regions' resilience and to reduce vulnerability factors (Bechara, 2020). There should also be greater incentives for migration to interior and southern cities, such as tax incentives and assistance related to acquiring land.

Neglecting to regulate evacuation operations, particularly large-scale evacuations, can lead to additional disruptions and chaos due to a lack of coordination (Tsai, Chang, 2023). Therefore, there is a pressing need for legislation to focus on this aspect and delegate powers to authorities to manage it. This includes the necessity of creating designated evacuation maps and integrating evacuation instructions and guidelines into a unified system to simplify the process and avoid confusing citizens, thus preventing delays in evacuations. Additionally, there should be attention to organizing individual evacuation procedures for the elderly and people with disabilities. It is also important to distinguish between the organization of rescue operations mentioned in the law and evacuation operations in terms of objectives and procedures, focusing on preventing exposure rather than protection during exposure.

The identification of shelter locations and their structural specifications also requires special attention (Tsai, Chang, 2023). This cannot be achieved merely by following traditional methods that provide only basic necessities; rather, it must undergo a comprehensive assessment of the site and the available local resources. It is unacceptable for shelters to be located in areas that are also at risk. Standards should be established that correspond to the types of risks and potential disasters, and a general model should be developed regarding planning and engineering to

ensure protection against the maximum number of risks and low-frequency threats.

Moreover, Article 68 neglects the aspect of waste management and sanitation during relief and rescue operations, which should be a fundamental component in relief efforts to prevent negative outcomes (Gupta, Nair, 2012). It is appropriate to include this aspect in the conditions for creating shelters, particularly to protect public health, which is a central factor that disaster management aims to achieve overall (Evangelista et al., 2024).

An aspect that should also be addressed by legislators is the management of waste resulting from disasters, as it requires special attention in order to prevent the negative effects that may result from improper disposal, which could be detrimental to the future of the environment in which it is dumped.

The use of modern technologies in the prevention and management of major disasters has become very important and may be essential to avoid compounding losses, especially during emergencies. Therefore, flexibility in legislation is needed to allow the use of certain technologies, such as drones, to provide better means for evacuation and intervention.

In addition, a focus on international cooperation and joint coordination to manage risks is also crucial for the import and export of knowledge and technologies, especially those related to warning and information systems. Such cooperation with neighboring countries is essential to address shared risks and transboundary hazards. Consideration should be given to establishing a global framework for disaster management to facilitate the receipt of assistance in emergencies and to avoid the negative effects of lack of coordination.

Many risks, such as floods, forest fires and droughts, are linked to climate change. Therefore, it is appropriate to integrate some climate adaptation guidelines into risk management and disaster reduction laws and regulations (Matikinca et al., 2024).

In addition, there is a need to create a national database that includes losses from disasters to help analyze historical data on each type of risk and identify patterns to improve future responses, while providing a more conducive framework for raising awareness in vulnerable areas and improving opportunities for international cooperation in disaster management..

The adoption of a local preventive culture is crucial (Pastrana-Huguet et al., 2022), as it is based on real past experiences and should be promoted, especially in remote areas significantly exposed to risks. However, it must be closely monitored by experts to ensure its effectiveness (Matlakala, 2022) and to prevent practices that could lead to adverse

outcomes before relying on them for protection. The concept of participation mentioned in the law should evolve from merely informing and consulting about risks and preventive arrangements to actively encouraging the establishment of specific preventive measures.

Recovering from disasters requires a precise assessment of damages across various aspects, which is of utmost importance (Miri et al., 2024a, 2024b). It is also essential to develop mechanisms and tools for assessing losses and environmental damages caused by disasters and for rehabilitating those areas.

An additional aspect that could enhance disaster management and recovery is planning for recovery before disasters occur. This involves implementing measures and procedures that would facilitate a quick return to normalcy, thereby achieving the concept of disaster resilience (Cao, Feng, 2025).

The law must effectively clarify the importance of investing in risk prevention. Given the difficulty of evaluating the outcomes of preventive measures, a method should be developed to assess the return on investment in the risk prevention sector and to clarify this return to secure the necessary support for further actions. Reasonable tax incentives could also be considered for economic operators to encourage them to invest in environmental and social initiatives related to sustainable development (Coleta Eisaqui, Brasil, 2021).

It is also appropriate to integrate the assessment of major disaster risks when studying the potential environmental impact. This should consider the simultaneous occurrence of risks, and the issue of compensating for environmental damage should be explored, as financial compensation alone may be insufficient. Additionally, it is crucial to create a vulnerability map for natural resources such as lakes, forests, and protected areas, and to establish general conditions to prevent their exposure to hazards.

The absence of regulatory texts for this law opens the door to proposals that could add value in achieving a comprehensive legal and regulatory framework. One aspect that remains unclear is the methods for preparing, amending, updating, and implementing prevention plans, which Article 25 of Law 24-04 has left to regulations. This is a key element affecting the practical application of prevention plans and procedures. Without a clear path for its realization, the law's significance could diminish over time, potentially leading to perceptions of superficiality and incomplete adherence to its provisions.

One major delay in issuing regulatory decrees on this aspect is the difficulty in determining the review and update period. This period should be based on an understanding of the frequency of risk occurrences and confirmation of their actualization, an area that cannot be effectively quantified or justified. Consequently, various laws related to the review of prevention plans do not provide sufficient clarification on the timeline for reviewing and updating these plans.

Relying solely on a set timeframe for reviewing prevention plans, especially in the long term, does not genuinely serve the objectives of achieving prevention. This is particularly true considering the changes that may occur, such as climate, environmental, and structural changes affecting various areas.

Furthermore, it is inappropriate to rely on the phrase "as needed" in laws, as it does not provide a suitable basis for dependence and does not present a clear motivation for reviewing prevention plans. This allows for an extensive range based on ambiguous evaluations.

The following elements are important and could be incorporated into the legal text regarding the review and updating of prevention plans, potentially providing significant additions to the law:

- Periodic Review: Establish a periodic review process, following the same procedures used for preparation and approval, considering the type of disaster risk to determine the review period. Additionally, conduct an annual assessment, with reviews based on the results of this evaluation.
- Environmental Changes: Review prevention plans based on reports from research institutions concerning known and studied environmental changes that impact exposure to risks.
- Structural Changes: Conduct reviews based on major structural changes, including infrastructure and changes in human settlements.
- Post-Disaster Review: After each disaster related to one of the risks defined by law, conduct a review to ensure that the new conditions left by the disaster do not pose a threat of further disasters of the same or other types, thus preventing the simultaneous occurrence of risks.
- Technological and Technical Changes: Review prevention plans based on reports from research institutions that include technological and technical changes in the fields of prevention, risk detection, forecasting, and warning.
- Legislative Changes: Review plans based on legislative changes or outputs from international agreements.
- Community Requests: Expect reviews to follow community requests or consultations.
- Geographical and Climatic Aspects: Take into account geographical, climatic, and potential vulnerability aspects during reviews.

- Facility Re-evaluation: Re-evaluate facilities after each exceptional incident, whether exposure occurred or not.
- Continuous Monitoring: Impose continuous monitoring procedures for protective structural facilities.
- Assessment of Preventive Measures: Following the implementation of preventive measures, conduct assessments to identify potential imbalances. Develop different scenarios and make necessary adjustments to avoid adverse outcomes from functional disruptions of protective measures, such as flood control channels. Ensure the completion of preventive studies coincides with the establishment of refuge areas during disasters.

Prevention involves not only establishing structural measures but also implementing non-structural ones. The success of structural measures is often linked to investment in non-structural actions, with one of the most important being raising public awareness about risks. Although the law establishes principles to ensure information dissemination and fosters the development of knowledge related to risks and disasters, it does not adequately address the role of citizens in ensuring the effectiveness of protective facilities.

The discussed elements can also be utilized for intervention plans, which may require updates. New circumstances necessitating intervention in prevention plans may also require adjustments to intervention plans to ensure their feasibility during emergencies.

Neglecting or delaying the issuance of regulatory texts for prevention and disaster management laws may diminish their significance and render them ineffective, as they will not help achieve practical prevention conditions (Azouz, 2019) unless there

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are complementary and detailed regulatory decrees outlining the operations and procedures to be taken or prohibited. Thus, a significant portion of the future of risk and disaster management is closely linked to the issuance of these texts and the accompanying directives.

## 4. Conclusion

Establishing a comprehensive legal framework for risk prevention is essential to ensure the safety of human interests. In Algerian legislation, Law 24-04 on risk prevention addresses many previously unanswered questions that were not clarified by the earlier law. However, it still lacks some necessary clarifications, which could impede achieving adequate levels of protection. Notably, it omits certain risks and details related to risk and disaster management.

This research addresses some of the most critical aspects and clarifies several points that should be considered to achieve acceptable levels of prevention. Additionally, the delegation of responsibility for preparing, implementing, and updating prevention plans allows for proposing essential elements to establish a new framework for programming these plans. The text suggests that prevention plans should be reviewed in response to environmental changes, after disasters, or following technological advancements in the field, as well as through periodic reviews that consider the types of anticipated risks.

The research also emphasizes the necessity of community participation and major structural changes in the review and updating of prevention plans. This work aims to contribute to developing a better legal framework that allows for more effective regulation of risk prevention.

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