

PERFORMANCE AUDITING IN THE CONTEXT OF FLOOD RISK—IDENTIFYING WEAKNESSES AND SOLUTIONS FOR PREVENTION AND MITIGATION OF POTENTIAL EFFECTS

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Abstract:

This paper analyzes the role of performance auditing in flood risk management in Romania, with a focus on assessing the efficiency, effectiveness, and economy of public programs aimed at prevention, emergency response, and post-disaster recovery. Based on the examination of findings derived from a nationwide performance audit mission, the study identifies structural and operational deficiencies, including unauthorized or poorly maintained infrastructure, shortages of specialized personnel, weaknesses in planning and interinstitutional coordination, and inefficient use of financial resources. The scientific contribution of the study lies in integrating performance audit findings into a broader analytical framework of disaster risk governance, highlighting how external public audit can function as a mechanism for strengthening institutional resilience and improving public policy design and implementation. The paper proposes strategic directions for optimizing the legislative framework, modernizing infrastructure, and enhancing administrative capacity, supporting the need for a preventive and coordinated approach to reducing the impact of floods on the population and the economy.

Key words: RCA audit; disaster management; flood risk; deficiencies/weaknesses; ways to prevent; mitigate potential effects

JEL classification: H54, H61, H72, H83.

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1. INTRODUCTION

Recently, the supreme audit institutions of various countries around the world have been playing an increasingly important role in introducing a climate of transparency and accountability in disaster management. To achieve this, multiple audit missions are conducted, with the primary aim of reducing risks, increasing the efficiency of resource utilization, ensuring legal assistance to affected individuals, and more. Based on the content of an important professional-methodological audit document published by [INTOSAI \(2020\)](#), we highlight that disasters can strike any part of the world at any time. They may result from natural causes (e.g., earthquakes, tsunamis, floods, or volcanic eruptions), be human-induced (e.g., housing developments in flood-prone areas, inadequate building standards in earthquake-prone regions, or nuclear accidents), or represent a combination of both, such as a pandemic. Disasters can occur suddenly (e.g., earthquakes) or develop gradually (e.g., droughts) and often have significant impacts on people, the environment, and the economy. Romania also faces considerable exposure to various types of risks, including extreme natural phenomena, health crises, and technological incidents.

Between 1900 and 2021, the country experienced 101 major disasters, including 53 floods, 11 earthquakes, 20 extreme temperature events, 11 severe storms, and two major droughts. These events caused economic damages exceeding USD 17.18 billion, affected over 2 million people, and resulted in the loss of more than 4,939 lives ([RG, 2024a](#)). As a result, significant amounts of money are spent on humanitarian aid and the rehabilitation of affected individuals, alongside the reconstruction and restoration of disaster-damaged infrastructure and public institutions. For instance,

between 2014 and 2021 alone, the Romanian Government issued 31 decisions allocating funds to administrative-territorial units affected by natural disasters. The amounts granted from the Intervention Fund or the Government's budgetary reserve, expressed in thousands of lei, are presented graphically in [Figure 1](#):

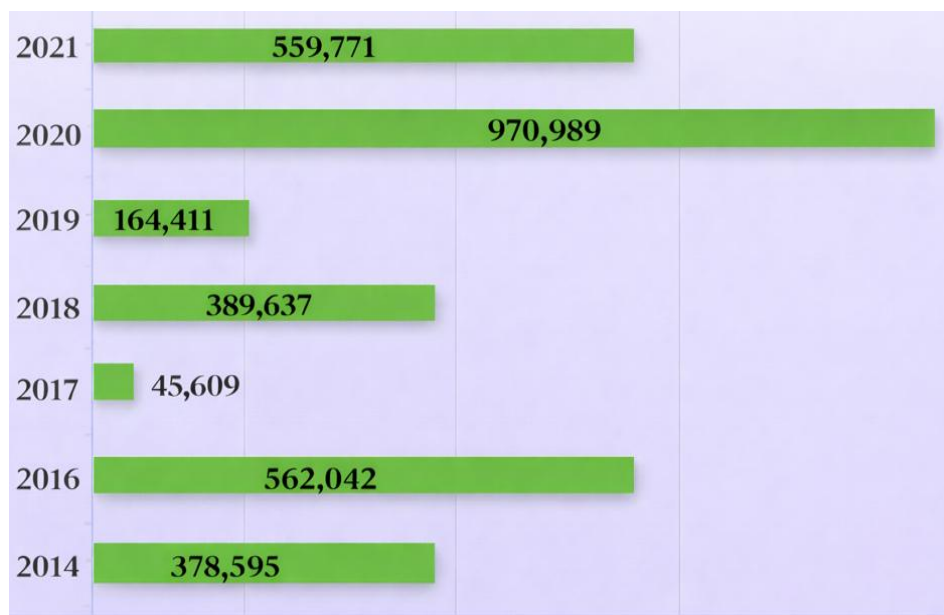


Figure 1. The situation of amounts (thousands of lei) allocated for mitigating the effects of floods during the period 2014-2021
([RCA, 2023](#))

Romania allocates significant resources to reducing the impact of disasters, a highly cost-effective approach. In recent years, a proactive and integrated risk management strategy has taken shape, reflected in initiatives such as the national RO-RISK project, which focuses on assessing and managing ten major hazard types. Between 2014 and 2021, disaster risk management funds exceeded 73 billion RON (15 billion EUR), sourced from national programs supported by the state budget. Additionally, during the 2014-2020 period, approximately 7.3 billion RON (1.5 billion EUR) were invested through various European Union financing mechanisms ([RG, 2024a](#)).

These efforts have led to significant progress in developing the SAT, strengthening monitoring and forecasting capabilities of specialized agencies, and optimizing alert transmission mechanisms, exemplified by platforms such as RO-ALERT. Given the substantial economic implications of disasters, the Ministry of Finance integrates their impact into the Triennial Fiscal-Budgetary Strategy, analyzing risks associated with phenomena such as earthquakes and floods. A key milestone in consolidating this strategic approach was the adoption of the National Disaster Risk Management Plan 2020-2027, which outlines action directions to reduce vulnerability and enhance national resilience ([CNSU, 2021](#)). Addressing a topic such as this, focused on Romania's specific challenges, requires clarifying the link between the activity of an external public audit institution, such as the RCA, and the manifestation of flood risk in inhabited areas, economically active regions, or even in the natural environment, regardless of human presence. Such clarifications are particularly necessary given that, traditionally, RCA audits focus on financial-accounting matters, with missions centered on determining compliance in activities or financial statements.

Simply reading Article 1 of Law No. 94/1992 on the organization and functioning of the Court of Accounts does not provide much clarity: "(1) The Court of Accounts exercises control over the formation, administration, and use of state and public sector financial resources; (2) The control function of the Court of Accounts is carried out through external public audit procedures established in its own audit standards, developed in accordance with generally accepted international audit standards (...)" ([RP, 1994](#)). Therefore, it is important to understand the RCA's role in conducting performance audits. This type of audit represents "an independent evaluation of how an entity,

program, activity, or operation functions in terms of efficiency, economy, and effectiveness", aiming solely at "cost reduction, increased efficiency in resource utilization, and achievement of intended objectives" (RP, 1994). Moreover, recommendations resulting from such audit missions specifically target enhancing the performance of the audited sector or entity by either reducing resource costs and/or increasing results (Nicula et al., 2017; Boulescu et al., 2009; Ispir, 2008; Bostan, 2011, 2010ab). In practice, "performance auditing can be conducted both at the end and during the implementation of projects, programs, processes, or activities", following RCA's own methodology (RCA, 2014, 2022), which is based on INTOSAI audit standards (a "set of concepts, guiding principles, procedures, and methods that enable external public auditors to determine the steps and verification procedures required to achieve the set objective") and best practices in the field (RCA, 2023).

The process concludes with the issuance of an audit report, built upon the application of complex, specific procedures (Firtescu and Bostan, 2024; Bostan and Firtescu, 2024). When auditing disaster-related matters, it is important to consider that disaster management follows a cycle divided into six segments—two of which pertain to preventive and preparedness measures that a government can establish and implement in advance (pre-disaster activities), while the remaining four describe actions taken after the disaster occurs (post-disaster activities) (Figure 2).

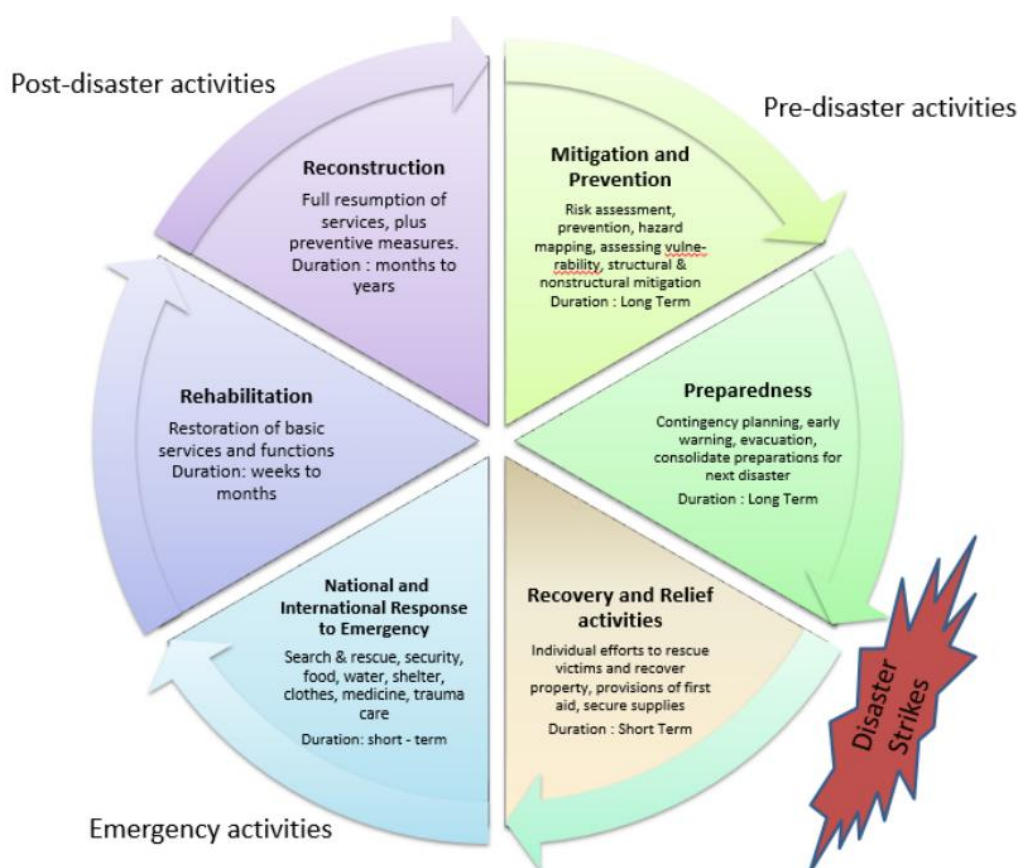


Figure 2. Disaster management cycle showing pre- and post-disaster phases
(SAI of Indonesia, 2019).

Evidently, an audit mission of this nature must go through multiple stages, ensuring proper planning, establishing the audit terms, and understanding the subject and its context, as well as assessing risks, analyzing issues, and identifying fraud risk (INTOSAI, 2020). This is followed by the development of an audit plan, the design of the audit, the actual execution of the audit, and finally, the drafting of the audit report.

In an effort to go beyond general theoretical aspects, we have structured our work as follows: (1) Introduction, (2) Some considerations regarding the issue of flooding in Romania, (3) The necessity and importance of conducting audit missions aimed at preventing and mitigating the effects

of natural disasters such as floods - 3.1. The concept of flood management and the necessity of auditing the field; 3.2. RCA's audit of the efficiency and effectiveness of programs, actions, and measures undertaken to prevent flood risk (3.2.1. Evaluation of activities conducted during the pre-disaster stage — Findings and warnings, 3.2.2. Findings from the evaluation of operational management activities during the disaster stage, 3.2.3. Insights from the evaluation of activities undertaken in the post-disaster stage); 3.3. The most important recommendations formulated (structured according to the implementing institution: MDLPA, ANAR, MMAP, and MAI), (4) New strategic directions for flood prevention and mitigation, in line with audit recommendations; some plausible expectations, and (5) Conclusion

In this context, the scientific inquiry is guided by the following research question: *to what extent and through which mechanisms can performance auditing contribute to strengthening the efficiency and resilience of the national flood risk management system?*

From a *methodological perspective*, the study adopts a qualitative research design, primarily based on documentary analysis. The investigation draws upon specialized literature in the fields of public audit and disaster risk management, as well as on the examination of performance audit reports issued by the Romanian Court of Accounts. In addition, normative acts, strategic documents, and official reports published by national and European institutions with recognized institutional credibility were systematically analyzed.

Through the correlation and interpretative assessment of these sources, the research seeks to identify structural vulnerabilities and to formulate strategic directions for improving flood risk governance.

2. SOME CONSIDERATIONS REGARDING THE ISSUE OF FLOODING IN ROMANIA

Floods are inevitable natural phenomena, but their intensity and frequency are significantly influenced by human activities. The expansion of settlements in flood-prone areas, the degradation of water-retention ecosystems through deforestation and land exploitation, as well as the effects of climate change, all contribute to amplifying the risks associated with these hydrological events. Human interventions in watercourses have profoundly altered the dynamics of river basins, affecting their natural flood attenuation capacity. Although floods are natural processes, they are exacerbated by human-induced environmental changes, including uncontrolled urbanization, unsustainable agricultural practices, and large-scale deforestation. As a result, the impact of these events has become increasingly severe, both in terms of economic losses and human casualties (RG, 2015). In the past two decades, Europe has been affected by over 100 major floods, resulting in more than 700 deaths, the evacuation of over half a million people, and damages exceeding 25 billion EUR (EC, 2007). Extreme hydrological events observed globally and in Romania highlight the vulnerability of communities not only to slow-onset floods, typical of large rivers, but also to flash floods, which are characteristic of small river basins (under 200-300 km²). There is an alarming increase in the frequency of these violent floods, which have caused significant destruction and loss of life. International experience confirms that while floods cannot be prevented, their effects can be mitigated through efficient management based on rigorous assessments and the implementation of risk reduction measures (CNSU, 2020).

In recent years, the approach to flood management has undergone a significant shift. The focus is no longer solely on frequent events but also on less probable occurrences with potentially devastating impacts—such as those with a 1% exceedance probability (RG, 2015). In Romania, after 2005, severe floods have occurred almost annually, some reaching historical proportions, causing both loss of life and significant material damage. A recent example is the flooding event from September 13-19, 2024, when the counties of Galați and Vaslui were hit by torrential rainfall exceeding 200 l/m² in 48 hours, triggering massive runoff from slopes and causing flash floods in the river basins of the Siret and Prut rivers (RG, 2024b). The consequences were devastating, severely impacting households and people's properties (Figure 3).



Figure 3. Flood occurrence – Galați Area (2024).

Processed by the authors based on: (Financiarul, 2024; Mediafax, 2024; Observator, 2024).

Ensuring the protection of the population against floods through defense infrastructure is a key strategic objective, aligned with the directions set in the National Flood Risk Management Strategy for the medium and long term (RG, 2024b). This strategy outlines the progressive implementation, by 2035, of measures aimed at significantly reducing population exposure to flood risk (which is at a significant level – Figure 4), targeting a reduction in the number of vulnerable individuals to approximately 350,000 and minimizing the loss of human lives caused by these disasters.

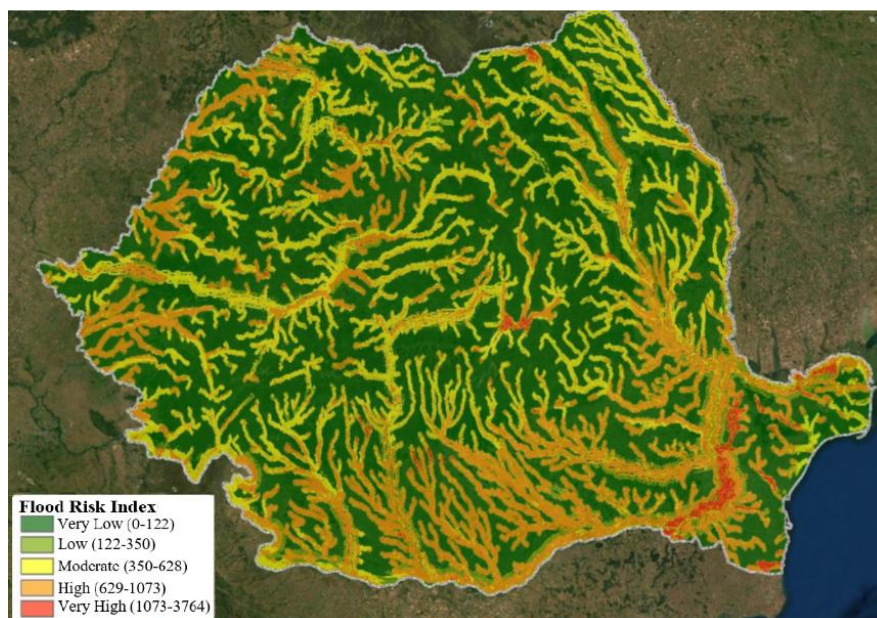


Figure 4. The risk of flood occurrence in Romania

(MIPE, 2023)

The analysis of flood risk (see the map provided) indicates a high vulnerability in southern and southeastern Romania, as well as in certain regions in the west, where the probability of significant flash floods is considerable. Reducing this risk requires an integrated approach, based on both structural measures—such as the construction of dams, levees, and river regulation works,

improving riverbeds, draining flood-prone areas, and expanding forested surfaces—and non-structural measures, including monitoring and early warning systems, preparedness and evacuation strategies, public education, land-use regulation, relocation of exposed residential areas, and the implementation of compensation mechanisms. However, the determining factor in applying these measures remains cost, which directly influences the feasibility and scale of interventions. The increasing frequency of extreme hydrometeorological events has exposed deficiencies in the current flood prevention and protection system, highlighting the need for a substantial reassessment and improvement of intervention mechanisms (RG, 2024b).

In this context, Romania is obligated, under Directive 2007/60/EC of the European Parliament (Rădulescu et al., 2013; EP, 2007), to update its flood risk management legislation every six years, ensuring a framework adapted to continuously changing climatic and hydrological realities. The MMAP is the designated institution responsible for coordinating flood risk management at the national level, tasked with developing and implementing specific strategies in this field (RG, 2016a). According to Article 67 of Law no. 107/1996, the development and implementation of flood protection policies fall under the authority of the central water management institution, necessitating a strategic and coordinated approach to enhance the resilience of communities exposed to such events (RG, 2024b). It is worth mentioning that the aforementioned directive "requires Member States to take a series of steps to properly identify and manage flood risk in accordance with existing international standards and best practices." The implementation of this directive in Romania follows three stages: (i) Preliminary flood risk assessment, in which all watercourses, coastal areas, urban zones at risk from pluvial sources, and groundwater risk zones are evaluated based on the probability of flooding.

The goal of this assessment is to identify all APSFR; (ii) Creation of flood hazard and risk maps for each of these areas; (iii) Development of FRMPs for each of the 11 ABAs, plus the Danube River. Thus, 12 FRMPs have been developed, including programs of measures aimed at reducing flood risk. These stages constitute an implementation cycle that repeats every six years.

It should be noted that these provisions have been fulfilled through the adoption of several regulatory acts, which now require revision in accordance with certain legal provisions currently in force (RG, 2014ab, 2016b).

3. THE NECESSITY AND IMPORTANCE OF CONDUCTING AUDIT MISSIONS AIMED AT PREVENTING AND LIMITING THE EFFECTS OF NATURAL DISASTERS SUCH AS FLOODS

3.1. THE CONCEPT OF FLOOD MANAGEMENT AND THE NEED FOR AUDITING THE SECTOR

Efficient flood risk management requires an integrated approach that involves multiple areas of activity, including water resource management, spatial and urban planning, environmental protection, agricultural and forestry development, transport and construction infrastructure, tourism, and citizen protection (RG, 2015). Each sector has specific responsibilities, and the adoption of coordinated measures can significantly reduce the negative impact of floods, either through passive actions that limit damages or active measures that reduce the likelihood and severity of such extreme events. In this context, Romanian authorities have recognized the importance of managing emergency situations caused by floods, given the country's hydrographic and hydrological vulnerability. Therefore, auditing the measures implemented in this field is of utmost importance not only for Parliament and the Government—authorities responsible for the sector—but also for the citizens affected by floods or residing in risk-prone areas. Consequently, it is important to assess the measures undertaken both by the authority with primary responsibility for flood risk management (MMAP) and by those with secondary roles (MAI and MDLPA) or with relevant competencies in this domain (ANAR).

3.2. RCA'S AUDIT OF THE EFFICIENCY AND EFFECTIVENESS OF PROGRAMS, ACTIONS, AND MEASURES UNDERTAKEN FOR FLOOD RISK PREVENTION

A performance audit conducted in 2023 by RCA evaluated the measures implemented between 2014 and 2021 for flood risk prevention, institutional responses during such events, and the post-disaster recovery process. The audit analyzed the activities carried out by the main institutions involved—MMA, MAI, MDLPA, and ANAR—to determine their compliance with their specific responsibilities in this area. More specifically, the audit mission included the following procedures (RCA, 2023):

3.2.1. ASSESSMENT OF PRE-DISASTER ACTIVITIES—FINDINGS AND ALARMING ISSUES

The audit findings highlighted significant issues related to flood protection infrastructure. Out of the 2,013 dams analyzed, only 983 had valid operating permits, while 221 had expired authorizations, and 809 had never been authorized. In 2021, 121 dams classified as Category C and D had no identified owner or administrator, posing major risks in the event of flash floods. An even more concerning situation was identified regarding flood protection levees, which lacked safety authorizations due to the absence of certified experts for their evaluation. Additionally, the enforcement of construction safety regulations in flood-prone areas was hindered by a shortage of inspection personnel. These deficiencies have led to inadequate implementation of preventive and risk reduction measures. Furthermore, only 438 administrative-territorial units managed to integrate flood hazard and risk maps into their territorial planning documents, limiting the effectiveness of preventive actions.

3.2.2. FINDINGS ON THE EVALUATION OF OPERATIONAL MANAGEMENT DURING DISASTERS

Although the national emergency management system is well-structured procedurally, vulnerabilities were identified in the information flow and inter-institutional collaboration. The lack of efficient communication infrastructure and delays in document transmission between authorities can affect the prompt response to severe floods. Moreover, the operational capacity of the involved structures is limited by insufficient personnel and inadequate equipment for warning and intervention. To improve response capabilities, periodic updates of intervention plans are necessary, in line with legislative changes and emerging challenges posed by extreme weather phenomena.

3.2.3. KEY ASPECTS IDENTIFIED IN THE EVALUATION OF POST-DISASTER ACTIVITIES

External audit evaluations indicate major difficulties in damage assessment and compensation allocation. The absence of a standardized methodology and the low number of specialists assigned to these tasks generate delays and inconsistencies in managing financial resources allocated for infrastructure restoration. Additionally, the flood protection system suffers from a lack of continuous investment in rehabilitation and maintenance of existing infrastructure. This significantly reduces risk prevention capacity and amplifies the negative effects of floods. A better allocation of both financial and human resources is imperative to ensure the optimal functionality of flood defense structures.

3.3. KEY RECOMMENDATIONS FORMULATED

To address the identified deficiencies, a series of recommendations were issued to the audited institutions (RCA, 2023), structured according to the institutions responsible for their implementation: MDLPA, ANAR, MMA, and MAI.

3.3.1. MDLPA AND ISC

MDLPA and ISC are responsible for ensuring specialized personnel for state control in the field of urban planning and territorial management. This activity will include monitoring compliance

with basic construction requirements in flood-prone areas, as well as the technical evaluation of damages caused by such natural disasters.

3.3.2. ANAR

ANAR management will adopt measures to update and revise the basin-level flood defense plans for the 2022–2025 period in accordance with current regulations. Furthermore, at the ABA Dobrogea-Litoral level, a clear regulation will be implemented for the coordinated operation of the hydrographic basin. To eliminate administrative obstacles in the implementation of flood prevention projects, ANAR, together with MMAP, will initiate legislative amendments to reduce the time required for obtaining building permits, urban planning certificates, and investment approvals. Regarding flood-prone areas, ANAR will implement preventive measures such as drainage channel development, removal of obstructive vegetation, and maintenance of key hydrotechnical structures. To enhance the safety of hydrotechnical infrastructure, ANAR will allocate funds for major repairs and modernization projects, including those for Lacul Morii and the Buftea reservoir. Additionally, an analysis of unmanaged dams will be conducted to facilitate their transfer to competent local authorities. To improve flood risk management, ANAR will take steps to modernize monitoring and communication systems, including integration into specialized communication platforms. Additionally, a personnel structure analysis will be conducted to ensure a sufficient number of specialists capable of managing emergency situations.

3.3.3. MMAP

MMAP management, in coordination with ANAR, will conduct a detailed analysis of the human resources involved in flood risk management. The focus will be on identifying and attracting qualified specialists important for monitoring and maintaining flood defense infrastructure. In collaboration with educational institutions in the field, MMAP will initiate programs aimed at attracting young professionals to the hydrotechnical sector, thereby contributing to the development of a new generation of experts in water resource management. Through these measures, the involved institutions aim to significantly improve flood prevention and response capacity by optimizing both existing infrastructure and the associated legislative and administrative framework.

3.3.4. MAI

MAI management will initiate a detailed analysis to identify the reasons for the failure to establish the working group on flood risk. Based on the conclusions of this assessment, concrete measures will be adopted to operationalize GLERN. Additionally, MAI will coordinate the revision and updating of the regulatory framework under Government Emergency Ordinance No. 21/2004 on the National Emergency Management System to align it with current legislative amendments. This process will include monitoring the implementation of necessary changes. In collaboration with IGSU, MAI will analyze the staffing needs of prevention structures within territorial inspectorates and ISU B-IF, seeking appropriate solutions to ensure an optimal number of specialists. As the coordinating authority of prefecture institutions responsible for managing flood risks at the county level, MAI will examine the reasons why flood hazard and risk maps have not been included in the general urban plans of administrative-territorial units. Based on the results of this analysis, MDLPA and other competent institutions will be asked to propose concrete measures for addressing the situation. Additionally, MAI will mandate the adoption of all necessary measures to ensure that local authorities and risk-source economic operators, including hydrotechnical infrastructure administrators, provide and maintain warning and alarm equipment in optimal operating conditions. Furthermore, a review of regulations governing notification, warning, pre-alarm, and alarm activities in civil protection will be carried out to ensure they meet current requirements.

The progress of implementing the formulated recommendations will be monitored through future follow-up missions.

4. NEW STRATEGIC GUIDELINES AIMED AT PREVENTING AND COMBATING THE EFFECTS OF FLOODS, IN CORRELATION WITH THE AUDIT RECOMMENDATIONS; SOME PLAUSIBLE EXPECTATIONS

The previously mentioned audit highlighted the need for a profound restructuring of the legal and institutional framework to eliminate legislative overlaps and gaps in flood risk management. This effort aims to clarify the roles and responsibilities of central and local authorities, ensuring efficient coordination and faster intervention in emergency situations. Additionally, the proposed optimization seeks to improve the reporting and monitoring mechanisms for the implementation of necessary measures, to ensure the effective and consistent application of prevention and response strategies. The National Flood Risk Management Strategy, designed for a medium- and long-term horizon, represents an update of the previous document, aligning it with European requirements and approaches. It promotes sustainable risk management based on principles such as active participation, responsibility, data-driven decision-making, sustainability of actions, predictability of measures, and transparency in the decision-making process. The long-term vision of the Strategy is presented in Figure 5.

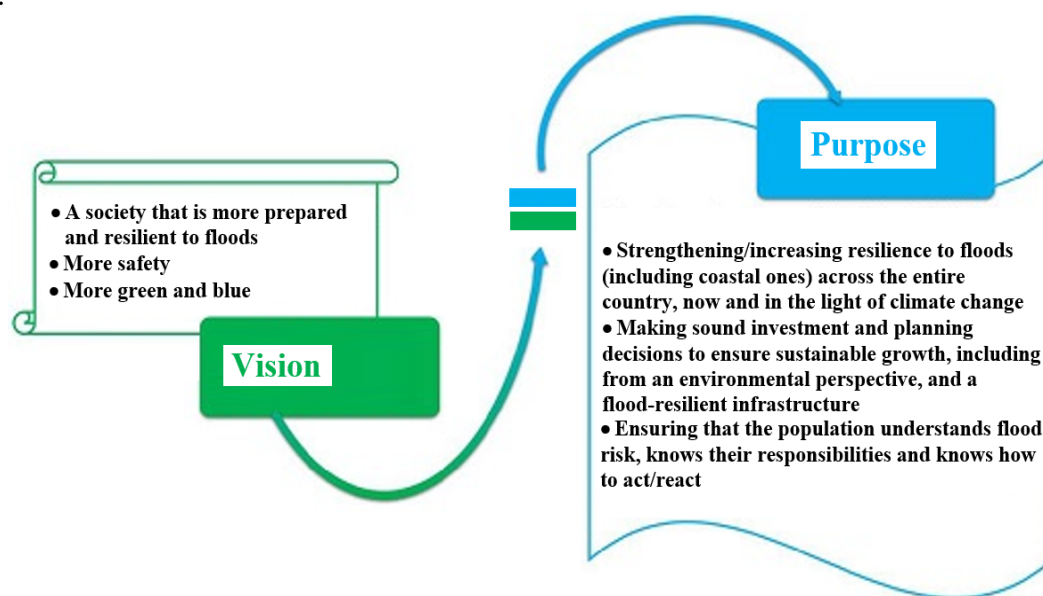


Figure 5. The long-term vision of the National Flood Risk Management Strategy
(RG, 2024c)

The Strategy's primary objective is to establish an integrated framework for reducing flood risk, focusing on protecting the population, the economy, the environment, and cultural heritage. At the same time, it aims to conserve and improve the quality and quantity of water resources, as well as protect natural habitats. This goal is achieved through a synergistic approach that combines prevention, protection, and preparedness measures, alongside actions specific to emergency management and post-disaster measures such as reconstruction and recovery of affected areas. The safety and resilience of Romanian society, economy, environment, and cultural heritage in the face of floods and related risks for the period 2023–2035 represent a central objective of the analyzed Strategy. Its effective implementation, along with the accompanying Action Plan, requires a coherent set of legislative, institutional, and administrative measures, including (RG, 2024c): (i) Reviewing and adapting the regulatory framework – to ensure the optimal applicability of the Strategy, it is imperative to modify the regulations that define the responsibilities of the institutions responsible for flood risk management; (ii) Improving interinstitutional collaboration – by establishing agreements between relevant ministries and institutions, aimed at enhancing the exchange of information and coordinating the measures outlined in the Action Plan.

These protocols will include clear working procedures to ensure a unified and efficient implementation; (iii) Strengthening administrative capacity – through a continuous professional

training program for specialists within the MMAP and the ANAR, ensuring they possess the necessary skills to effectively manage flood-related risks; (iv) Optimizing human resources and remuneration – filling staffing gaps within ANAR and ensuring a competitive remuneration system to attract and retain qualified personnel; (v) Developing the competencies of authorities and the private sector – through training sessions for representatives of central and local authorities, as well as specialists from the private sector involved in flood risk design and management. These sessions will support the integration of both traditional solutions and those based on green infrastructure, as well as the inclusion of climate change effects in flood hazard and risk assessment models; (vi) Strategic partnerships with the academic environment – to align university programs with the current requirements of the field and prepare future generations of specialists in flood risk management.

In terms of plausible expectations resulting from the implementation of these strategic measures (expected outcomes), they are expressed in the form of quantifiable targets (RG, 2024b). Thus, the implementation of the previously analyzed strategic measures aims to achieve concrete, measurable objectives that reduce the impact of floods and increase protection for the population, infrastructure, and heritage. It is estimated that, by 2035, over half of those exposed to the potential risk of floods with a probability of exceedance greater than 1% per year will benefit from a higher level of protection, with the percentage rising to approximately 57% compared to the current situation. The same trend is observed for residential properties, where the protection level will increase for about 56% of them, significantly reducing the vulnerability of homes to extreme events.

Additionally, the measures implemented will provide enhanced protection for 88% of public objectives exposed to flood risk, which is important for maintaining the functionality of critical infrastructure serving affected communities. Regarding cultural heritage, approximately 78% of historically and culturally important sites will benefit from solutions aimed at reducing flood and inundation-related risks. Another major outcome targeted is the significant reduction of economic damages caused by river floods. In the case of the APSFR, annual losses are expected to decrease from approximately 1.505 billion euros (in 2022) to about 1 billion euros by 2035. This reduction, equivalent to approximately 505 million euros annually, will have a considerable positive economic impact, contributing to the financial stability of vulnerable communities and reducing the burden on the public budget. On a global scale, total damages caused by floods are expected to be reduced by approximately 6 billion euros by 2035.

In addition to traditional protection measures, the Strategy places significant emphasis on nature-based solutions aimed at mitigating risks through sustainable interventions. Thus, by 2035, at least 275 green measures will be implemented, with the goal of fully or partially restoring the lateral connectivity of water bodies in river sectors identified as being exposed to flood risk. Moreover, at least 100 afforestation measures will be carried out in the corresponding sub-basins of these areas, contributing to reduced runoff on slopes and, consequently, reducing the effects of flash floods. These integrated measures will not only ensure more effective flood protection but also improve environmental quality, restore affected ecosystems, and increase long-term resilience.

5. CONCLUSION

The performance audit of flood risk management in Romania reveals persistent structural and operational vulnerabilities, despite the financial and institutional efforts undertaken since 2014. The findings indicate that the effectiveness of flood protection infrastructure is significantly constrained by insufficient financial allocations, shortages of specialized personnel, and delayed modernization processes. These shortcomings undermine both preventive capacity and post-disaster response efficiency.

The audit evidence demonstrates that systemic weaknesses—such as unauthorized or poorly maintained dams and dikes, limited integration of flood risk maps into spatial planning, and fragmented interinstitutional coordination—generate substantial risks not only for public safety but also for the efficient use of public funds. In this respect, the study confirms that performance auditing

plays a critical role in identifying governance gaps and in enhancing accountability within disaster risk management systems.

Addressing these deficiencies requires structural reforms, including the recalibration of personnel schemes in accordance with the complexity of the National Flood Risk Management Strategy, legislative updates to streamline infrastructure management, and improved allocation and monitoring of financial resources. Strengthening preventive measures and institutional coordination is essential for increasing the resilience of Romania's flood risk governance framework.

Ultimately, the research demonstrates that performance auditing can function as a strategic instrument for improving public sector efficiency and reinforcing institutional resilience in the field of disaster risk management.

Limitations and future research directions

This study is subject to several limitations. First, its qualitative nature and reliance on documentary analysis, primarily based on publicly available performance audit reports and official institutional documents, may limit the depth of empirical validation. The research does not include primary data collection (e.g., interviews with institutional actors or quantitative efficiency assessments), which could provide additional insights into the practical implementation of audit recommendations. Second, the analysis focuses exclusively on the Romanian case, without adopting a comparative perspective that would allow broader generalizations at the European or international level.

Future research could extend the investigation through comparative analyses between different Supreme Audit Institutions, incorporate quantitative assessments of the economic efficiency of disaster-related expenditures, or examine the long-term impact of audit recommendations on institutional resilience and fiscal sustainability. Such approaches would contribute to a deeper understanding of the strategic role of external public audit in strengthening public governance and public administration performance.

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Acronyms:

ABA – Administrații Bazinale de Apă [Basin Water Administrations]

ANAR – Administrația Națională "Apele Române" [National Administration "Apele Române"]

APSFR – Aree cu Risc Potențial Semnificativ la Inundații [Areas with Significant Potential Flood Risk]

CNSU – Comitetul Național pentru Situații de Urgență [National Committee for Emergency Situations]

GLERN - Grupul de Lucru pentru Evaluarea Riscurilor la Nivel Național [Working Group for National Risk Assessment]

IGSU – Inspectoratul general pentru Situații de Urgență [General Inspectorate for Emergency Situations]

INTOSAI – International Organization of Supreme Audit Institutions

MAI – Ministerul Afacerilor Interne [Ministry of Internal Affairs]

MDLPA – Ministerul Dezvoltării, Lucrărilor Publice și Administrației [Ministry of Development, Public Works, and Administration]

MIPE – Ministerul Investițiilor și Proiectelor Europene [Ministry of Investments and European Projects]

MMAP – Ministerul Mediului, Apelor și Pădurilor [Ministry of Environment, Waters, and Forests]

MRD – Managementul riscului de dezastre [Disaster Risk Management]

PMRI – Plan de Management al Riscului la Inundații [Flood Risk Management Plan]

RCA – Curtea de Conturi a României [Romanian Court of Accounts]

REDIG – Registrul Național al Digurilor din România [National Register of Dikes in Romania]

SAI – Instituțiile Supreme de Audit [Supreme Audit Institutions]

SAT – Sisteme de avertizare timpurie [Early Warning Systems]

SNMRI – Strategia Națională de Management al Riscului la Inundații [National Flood Risk Management Strategy]

UAT – Unități administrative teritoriale [Territorial Administrative Units]

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