International Journal of Disaster Risk Management • Vol. 7, No. 1 • https://doi.org/10.18485/ijdrm.2025.7.1.25

Publisher: Scientific-Professional Society for Disaster Risk Management

International Journal of Disaster Risk Management

Review Article

A Cross-National Study of Disaster Risk Management: Strengths and Weaknesses in Bulgaria, Romania, and Albania with Reflections on Serbia

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Received: 1 January 2025; Revised: 18 March 2025; Accepted: 6 May 2025; Published: 30 June 2025.

ABSTRACT

This study examines disaster risk management systems in Bulgaria, Romania, and Albania, highlighting their distinct strengths and weaknesses while drawing comparisons to Serbia's framework. The research underscores the growing urgency of disaster risk management in addressing challenges posed by natural and man-made (technological) hazards, which are further aggravated by climate change, globalisation, and socio-economic shifts. The study identifies best practices alongside systemic weaknesses by assessing the normative, institutional, and strategic frameworks of these countries. Key strengths include comprehensive legal systems, robust international partnerships, and sophisticated early warning mechanisms. However, these strengths are counterbalanced by limited local capacity, fragmented institutional coordination, and inadequate public awareness. The analysis highlights the potential for regional cooperation through a comparative lens, emphasising the importance of engaging local communities, enhancing early warning technologies, and aligning with global disaster management standards. The findings offer valuable insights into ongoing discussions about constructing resilient societies, providing practical recommendations to enhance disaster risk management systems across Southeastern Europe.

KEYWORDS

Disaster risk management, strengths, weaknesses, resilience, regional collaboration, institutional capacities, Bulgaria, Romania, Albania, Serbia.

Beli, A., Renner, R., Cvetković, V. M., Ivanov, A., & Gačić, J. (2025). A Cross-National Study of Disaster Risk Management: Strengths and Weaknesses in Bulgaria, Romania, and Albania with Reflections on Serbia. *International Journal of Disaster Risk Management*, *7*(1), 431–460.

1. Introduction

Modern society is exposed to a vast number of different hazards. In addition to traditional natural and technical-technological hazards, new types of threats are emerging. Traditional hazards are becoming more frequent and intense (Cvetković, Renner, Lukić, & Aleksova, 2024). These changes, resulting from the development of modern society, are driven by climate change, globalisation, and technological advancement (Todić, 2013). Throughout history, people have perceived and responded to disasters in various ways, gradually developing different strategies for disaster response (Cvetković & Milašinović, 2017). With the advancement of modern society, technology, and science, there is an improvement in scientific knowledge related to disaster risk management systems (Cvetković, 2024b). Special attention is given to disaster risk management due to increasingly frequent disasters, which consistently hinder the functioning of the social system.

Disaster risk management has become a key area of interest for the scientific community, political leaders, and practitioners worldwide (Cvetković, 2024a). Today, significant scientific findings enable the management and mitigation of disaster risks (Albris, Lauta, & Raju, 2020; Twigg, 2004). With societal development and the support of a multidisciplinary approach, this field will continue to advance and broaden its knowledge. Disaster risk management today is unimaginable without the use of online services. These services enable decision-makers to quickly consider all options to make the best decision (Cvetković, 2018). The facts underscore the importance and necessity of a disaster risk management system, as well as its ongoing improvement and development. The significance of the disaster risk management system in every country is primarily reflected in disaster prevention and the reduction of potential losses and consequences. Furthermore, it is also significant in response, rescue, recovery, community rehabilitation, and mitigating the consequences of disasters.

This paper aims to examine and compare the disaster risk management systems of Bulgaria, Romania, and Albania, highlighting their strengths, shortcomings, and opportunities for development. By analysing the normative, institutional, and strategic frameworks in these countries, the study identifies best practices and proposes practical recommendations to enhance disaster resilience. Additionally, it incorporates insights into Serbia's disaster management approach, providing a more comprehensive regional perspective. This research contributes to a deeper understanding of how diverse strategies in disaster management can strengthen resilience, reduce vulnerabilities, and improve national and regional coordination.

2. Defining Disaster Risk Management Systems

The disaster risk management system is defined as a process aimed at minimising losses caused by natural and technological disasters through risk assessment, risk reduction, preparedness, response, and recovery (Cvetković & Andrić, 2023; Cvetković & Ivković, 2022; Cvetković, 2023; Cvetković, Radovanović, & Milašinović, 2021; Cvetković et al., 2021; Lavell & Maskrey, 2014). The UN Office for Disaster Risk Reduction (UNDRR) provides one commonly cited definition: disaster risk management is "the application of disaster risk reduction policies and strategies to prevent new disaster risks, reduce existing disaster risks, and manage residual risks, thereby strengthening resilience and reducing disaster losses" (UNDRR, 2020).

Disaster management includes interventions, restoration, reconstruction, damage reduction, and preparedness. This process responds to disasters and contributes to sustainable societal development. Effective management is crucial for mitigating and minimising the adverse effects of disasters. Disaster management must be integrated into all phases of development, including preparedness and reconstruction, and it requires the involvement of all societal segments (Cvetković et al., 2022).

The concept of risk is crucial for understanding disasters. It arises from three factors: hazard, exposure, and vulnerability. When a hazard, such as a cyclone, becomes a real threat, the risk transforms into a disaster that endangers lives and property. For risk to exist, all three elements—hazard, exposure, and vulnerability—must be present (Cvetković, 2017). This concept facilitates a deeper

understanding and analysis of risk, enabling us to prepare more effectively and respond to potential hazards and disasters.

Disaster risk awareness involves understanding the risks within a population, the causes of disasters, and strategies for reducing vulnerability. This includes disseminating knowledge about risk reduction and enhancing the ability to convey this information effectively. Changes in behaviour and decision-making can significantly reduce disaster risk. Studies on risk perception highlight how mental and emotional mechanisms influence how individuals or groups experience and react to risks. The actions people take before, during, and after a disaster are crucial for effective crisis management and can help reduce negative consequences (Cvetković et al., 2018).

In recent years, disaster risk management has shifted from conventional engineering approaches to more comprehensive risk mitigation strategies. This shift reflects an understanding of the complexity of risk management and the potential benefits of a holistic framework. The new approach considers compromises among various factors, such as risk reduction, capacity building, and resource allocation. Unlike traditional, single-dimensional decision-making, it encompasses both structural and non-structural measures, as well as political instruments, to enhance efficiency and resilience. The new approach also emphasises the importance of interdisciplinary cooperation and interconnections among different sectors in addressing disaster challenges (Sayers et al., 2013).

Reducing disaster risk depends on effective risk management, which includes preparedness, response, and societal recovery after a disaster. This process depends on how risk is perceived in urban settings. Risk is assessed based on the probability, frequency, and intensity of the hazard. Risk assessment is crucial for informed decision-making and planning measures to reduce risk, as well as for identifying priority areas with varying levels of risk within the framework of risk management (Izumi et al., 2019).

2. Key Elements of Disaster Risk Management Systems

Disaster risk management is a comprehensive process involving decision-making, organisation, and the application of strategies to reduce the impact of disasters (Cvetković, 2024). This systematic approach entails using all available resources and capacities of society to confront disasters. It includes structural and non-structural measures to prevent, mitigate impacts, and prepare for hazards. The key elements of disaster risk management systems include the development of political, legal, and institutional frameworks, an integrated approach that encompasses various sectors such as the economy, education, and healthcare, and the promotion of human and institutional capacity-building (Cvetković & Todorović, 2021).

Additionally, insurance programs aligned with risk mitigation strategies, support for building resilient communities, dynamic risk assessment, and self-reliance and responsibility of local communities in disaster response are important. Ultimately, international cooperation and knowledge exchange play a crucial role in effective risk management. Various actors, including individuals, social groups, and communities, play a key role in utilising available resources both individually and collectively. These actors manage to confront long-term or sudden challenges that threaten their lives, turning these situations into opportunities for improvement and development (Pavićević, Bulatović, and Ilijić, 2019).

Work on establishing a political, legal, and institutional system for disaster risk reduction contributes to a greater capacity of states to confront various risks (Cvetkovic & Martinović, 2020; Cvetković & Janković, 2020; Cvetković & Milašinović, 2017). In this regard, adopting the Yokohama Strategy emphasises the obligation of states to protect their citizens from natural disasters, focusing on strengthening state capacities and improving legislation to combat the harmful effects of natural and other hazards effectively. Furthermore, this strategy encourages regional and international cooperation to prevent, reduce, and mitigate disasters, emphasising the enhancement of human and institutional capacities, technology exchange, information gathering and distribution, as well as resource mobilisation (Cvetković, Filipović and Gačić, 2019).

Risk management involves a series of activities to implement disaster risk reduction policies using administrative, operational, and organisational skills and capacities. This approach is designed to prevent the emergence of new and reduce existing risks through integrated and inclusive activities across economic, social, educational, regulatory, health, cultural, technological, and political domains. In recent decades, a paradigm shift has occurred, shifting the focus from hazards as the primary cause to the vulnerability of communities, with a special emphasis on applying early warnings and increasing preparedness to reduce this vulnerability (Cvetković, 2020).

Cvetković (2020) emphasises that effective risk management is fundamental for successfully implementing disaster risk mitigation strategies. Within the framework of global efforts to reduce disaster risks, management is defined as a process that encourages interaction between the scientific community and practitioners, with a special focus on creating partnerships among various stakeholders, including those addressing the socio-economic aspects of this issue. This approach facilitates the exchange of expertise, experience, and resources, which contributes to a more effective response to challenges related to disaster risk management, thereby improving overall understanding and approach to this complex topic (Cvetković, 2020).

Safety in using available resources requires careful testing and evaluation to accurately assess risks. Risk management is an ongoing process that involves analysing various types of risks (Đinović, 2011, p. 117). This monograph presents a comprehensive model for risk management that encompasses the steps of identification, analysis, and risk evaluation, supplemented by empirical research. A methodology for quantitative risk classification has been developed, allowing clear differentiation between low risks, which do not require detailed assessment, and high risks, which are challenging to reduce. The proposed model was tested in a case study at the Correctional Facility, where risks were identified and analysed based on data such as job difficulty, emotional and mental stress, microclimatic conditions, and lighting levels. Additionally, risk levels for potential adverse events were assessed, and a detailed analysis was performed in the dissertation. The essential elements of vulnerability assessment and the starting basis for development include a comprehensive analysis (Keković, 2006, p. 207).

The development and application of dynamic tools for risk assessment represent a complex task requiring a comprehensive view of various factors of current vulnerability, as well as the prediction of future risks and potential losses (Adedigba, Khan, & Yang, 2018; Gerds, Cai, & Schumacher, 2008; Jamshidi, Ait-Kadi, Ruiz, & Rebaiaia, 2018; Paltrinieri, Khan, & Cozzani, 2015; Thornton, 2002; Yu, 2017). In this context, using all available data is key in creating plans, programs, and policies, especially regarding land use and human behaviour in different settlements. Additionally, community autonomy is crucial but also requires continuous capacity building. Changing policies that support the unsustainable development of local communities before and after a disaster is one of the critical steps in this process (French & Kousky, 2023; Imperiale & Vanclay, 2016; Kapucu & Sadiq, 2016). Furthermore, local communities are responsible for adopting and implementing policies to enhance their capacity to respond effectively to disasters (Cvetković, 2020).

3. The Importance of Disaster Risk Management System Analysis

The analysis of disaster risk management systems is essential for identifying and improving existing capacities and weaknesses in disaster response (Cvetković, 2024; Cvetković & Šišović, 2024a, 2024b; Grozdanić & Cvetković, 2024). The increased risk of disasters and the growing vulnerability of people and property highlight the need to enhance societal resilience. Critical examination and improvement of the existing risk management system are crucial. This involves a detailed analysis of current capacities and exploring possibilities for system improvement to ensure more effective disaster prevention and management. Focusing on a proactive approach, emphasising preventive measures and actions before disasters occur, represents an important step in improving the disaster risk management system. Transitioning from a reactive to a proactive model requires developing and applying measures to reduce risks before they arise. Additionally, analyses reveal significant

shortcomings in the existing legislative and regulatory framework, necessitating the implementation of substantial reform measures (Cvetković, 2021).

Some of the main obstacles include the inefficiency and inadequacy of current laws and regulations, indicating the need for scientific research that will generate concrete proposals for improvement. Moreover, the lack of preventive measures and low public awareness of their importance further contribute to problems in risk management. Strengthening preventive activities and educational programs, as well as addressing organisational and systemic issues, are key to improving disaster risk management systems (Cvetković, Öcal & Ivanov, 2019).

The analysis of disaster risk management systems is gaining significance due to the increasing interest in this field within social sciences, which has only recently begun to develop. In the context of the importance of disaster risk management system analysis, Alexander's (1993) analysis reveals important aspects that contribute to understanding this complex area. Alexander identified six main approaches in disaster research: geographical, anthropological, sociological, developmental, medical, and technical. These approaches represent different perspectives through which disasters can be studied and managed. The geographical approach focuses on the interactions between people and their environment, including analysing how physical aspects of the environment, such as flood- or earthquake-prone areas, affect the risks people face (Alexander, 1993). This approach helps understand spatial factors contributing to disasters and assess risks based on geographic conditions. On the other hand, the sociological approach views disasters as social events that reflect ways of life and the structures of social communities. This perspective emphasises how social structures and lifestyle patterns can influence vulnerability and the ability to recover from disasters. For example, if people inhabit coastal areas prone to flooding, their vulnerability to disasters may be greater due to the high risk of adverse effects on life, health, and property (Cvetković, 2017).

These approaches demonstrate how different perspectives can contribute to a comprehensive understanding and analysis of disaster risk management systems, enabling an integrated approach in developing strategies and policies for prevention, mitigation, and risk management.

The analysis of disaster management systems is vital for several reasons related to comprehensively understanding and enhancing capacities for disaster response. First, analysing the system can identify how different segments of the disaster management system coordinate and function together. This includes assessing the effectiveness of prevention, preparedness, response, and recovery mechanisms. Alongside this, the analysis enables the identification of shortcomings in the existing system, such as communication problems between various agencies, lack of resources, or issues in policy implementation. Second, in-depth analysis helps identify areas where the management system can be improved. For example, suppose analysis reveals that certain parts of the system are not functioning as planned or that there are significant gaps in preparedness and response. In that case, a concrete plan can be developed to improve these aspects. This is important to ensure that resources and efforts are directed toward the highest-priority areas. Third, analysis aids in developing better risk-reduction strategies. Understanding how disasters impact different aspects of society and analysing their economic, social, and environmental consequences enables the creation of tailored and practical measures for risk reduction and mitigation. This includes developing and implementing preventive measures to reduce community vulnerability to disasters. Fourth, practical analysis of disaster management systems enables better planning and improvement of response and recovery strategies. Based on analyses of past disasters and assessments of the system, robust plans for quick and coordinated responses in future situations can be built, as well as effective recovery strategies after a disaster (Cvetković, 2021).

Thus, analysing this system enables learning from past experiences and applying best practices in future disaster management. This enhances society's preparedness and resilience, which are crucial for a successful response and recovery in the event of a disaster.

4. The Disaster Risk Management System in Bulgaria

4.1. Basic Characteristics (Geographical, Climatic, Hydrometeorological) of the Bulgarian Region

Bulgaria is located in Southeastern Europe, on the Balkan Peninsula. It encompasses diverse geographical and climatic characteristics, which impact its economy, natural resources, and living conditions for its population. Its geographical position, with a total area of approximately 110,993 km², makes it a country with highly variable terrain dominated by mountain ranges and plains. To the north, it borders Romania, with the Danube River forming a natural boundary, while it borders Serbia to the west. Greece and Turkey are its southern neighbours, and to the east, it is bordered by the Black Sea, which plays a key role in maritime transport and tourism. This geographical position makes Bulgaria a crucial transit point for goods and energy transport in the region (Apostolov & Krastev, 2011).

The terrain of Bulgaria is diverse, with several main mountain ranges and plains defining its landscape. The most important mountain ranges include the Balkan Mountains, also known as Stara Planina, which stretch from west to east and divide the country into northern and southern parts. The country's southwestern part is characterised by the high Rila and Pirin mountains, with Mount Musala (2,925 meters) being the highest peak in Bulgaria and the Balkan Peninsula. These mountains are a vital water source and dominate the region's mountainous climate. The Rhodope Mountains in the south play a key role in shaping the terrain along the Bulgarian-Greek border. On the other hand, lowland regions such as the Danubian Plain in the north and the Thracian Plain in the south are essential agricultural areas of the country (Apostolov, 2013).

The climate in Bulgaria is temperate-continental. The northern and central parts of the country have a typical temperate continental climate, with cold winters and warm summers. Average winter temperatures in these areas range between -2°C and 2°C, while summer temperatures can reach between 25°C and 30°C. In the south, the climate has a continental character with Mediterranean influences, resulting in milder winters and warmer summers. The most extraordinary climate conditions are found in the mountainous areas of Rila, Pirin, and the Balkan Mountains, where winters are long and snowy, and temperatures can drop as low as -5°C. Summer temperatures in the mountains are significantly lower than in the plains, often ranging between 10°C and 15°C, making these regions suitable for developing mountain tourism and winter sports (Apostolov & Krastev, 2011).

Hydrometeorological characteristics in Bulgaria also play an important role in shaping its natural environment. The most significant river is the Danube, which forms the natural boundary with Romania and is one of the largest rivers in Europe. The Danube holds substantial economic importance as it enables navigation and influences the development of agriculture in fertile plains along its banks. Other significant rivers in the country include the Iskar, which flows through the capital city, Sofia, and the Struma and Maritsa rivers, which flow into the Aegean Sea. The Maritsa River is crucial in supplying water to agricultural regions in the southern part of the country (Radeva & Nikolova, 2020).

The Black Sea region on Bulgaria's east coast has specific hydrometeorological characteristics. The Black Sea has a significant influence on the climate of coastal regions, where winters are milder and summers are more humid compared to inland areas. This region is renowned for its well-developed tourism, thanks to its long sandy beaches and mild climate, particularly during the summer months. Humidity in coastal areas is generally higher, which affects vegetation and agriculture (Marinova et al., 2017).

Bulgaria has highly diverse geographical and climatic conditions, which affect its natural resources, economic development, and the standard of living for its population. Its combination of plains, mountains, rivers, and the Black Sea coastline creates a unique natural environment that is conducive to the development of various industries, including agriculture, tourism, and energy. However, this also means the region is highly susceptible to various disasters.

4.2. Normative and Institutional Framework for Disaster Risk Management

The normative and institutional framework for disaster risk management in Bulgaria is based on a series of legal and strategic documents that regulate the prevention, assessment, and management of natural and technological risks. This framework encompasses several key laws and national and regional strategies that integrate preventive measures and activities aimed at mitigating the consequences of disasters.

Disaster risk management in Bulgaria is regulated by the Disaster Protection Act, which is the key normative act defining the responsibilities of various institutions and government bodies. This law governs the planning and implementation of national, regional, and local activities, including the development of strategies and programs for disaster risk reduction. It emphasises the importance of preventive activities, such as risk assessment and mapping of vulnerable areas, with the application of protective measures integrated into spatial plans and infrastructure projects (See more: https://lex.bg/laws/ldoc/2135540282 - accessed 01.09.2024).

In addition to this law, the Spatial Development Act plays a key role in preventing natural disasters. Spatial planning must consider risks from floods, earthquakes, landslides, and other natural phenomena to ensure the safety of construction and infrastructure facilities. This law obligates local governments to integrate protective measures into their development plans (See more: https://lex.bg/laws/ldoc/2135163904 - accessed 01.09.2024).

The Water Act is particularly significant in the context of flood risk management, which represents one of the most considerable natural risks in Bulgaria. This law defines measures for flood protection, including the construction and maintenance of embankments, water resource management, and the application of early warning systems. Additionally, the law regulates cooperation between various ministries and agencies to ensure the coordination of activities at all levels of government (See more: https://lex.bg/laws/ldoc/2134673412 - accessed 01.09.2024).

The Environmental Protection Act regulates measures for protecting natural resources vital for reducing disaster risks, such as soil erosion and forest degradation. The protection of forests, watercourses, and other environmental elements contributes to natural resilience against disasters and reduces their impact on human activities (See more: https://www.moew.government.bg/bg/zakon-za-opazvane-na-okolnata-sreda-6671/ - accessed 01.09.2024).

The Safe Use of Nuclear Energy Act addresses technological risks and mandates strict protection and safety measures for managing nuclear and radioactive materials. Bulgaria, as a country with active nuclear capacities, pays special attention to the prevention and mitigation of nuclear accidents, establishing an institutional framework for oversight and control (See more: https://lex.bg/laws/ldoc/2135455545—accessed 03.09.2024).

Disaster risk assessment is one of the key elements of risk management in Bulgaria (Petrov, 2017; Trifonova, Metodiev, Solakov, & Simeonova, 2023). Based on the Disaster Protection Act, risk assessments include analysing and mapping risk areas for different types of disasters, such as earthquakes, floods, landslides, forest fires, and nuclear accidents. These assessments are mandatory parts of national, regional, and municipal disaster protection plans (See more: https://lex.bg/laws/ldoc/2135540282—accessed 03.09.2024).

The responsible institutions for risk assessments include the Ministry of Regional Development and Public Works for seismic and geological risk, the Nuclear Regulatory Agency for nuclear accident risks, the Ministry of Environment and Water for flood risk, and the Ministry of Agriculture, Food, and Forestry for forest fires. These institutions coordinate their activities in cooperation with local authorities to ensure comprehensive assessment and effective risk management. Disaster risk management in Bulgaria requires the continuous improvement of the institutional and normative framework, as well as the application of modern methods for risk assessment and reduction at all levels of government.

4.3. Strategic and Planning Framework for Disaster Risk Management

The National Strategy for Disaster Risk Reduction for 2018-2030 is a key strategic document that defines long-term goals in managing risks from natural and technological disasters. This strategy incorporates preventive measures, including reducing the vulnerability of critical sectors of society and the economy, such as infrastructure, construction, and spatial development. The strategy aims to establish an integrated risk management system at the national, regional, and local levels, with a particular focus on strengthening the capacities of institutions and local communities to act effectively before, during, and after disasters (See more: https://mvr.bg/docs/librariesprovider43/документи-от-дирекцията/нормативна-уредба/стратегически-документи/rms-strategijanrb.pdf?sfvrsn=119f000b_2 - accessed 04.09.2024).

One of the main strategic objectives is to strengthen institutional capacities, which involves modernising technical systems for early warning and monitoring of natural and technological disasters, as well as training personnel within relevant authorities. This goal involves enhancing the capabilities of local governments and regional institutions for risk management, ensuring that these structures can respond effectively to disasters, and implementing risk reduction measures. A key component of the strategy is raising public awareness of risks and improving the population's knowledge of self-protection measures (See more: https://mvr.bg/docs/librariesprovider43/документи-от-дирекцията/нормативна-уредба/стратегически-документи/rms-strategijanrb.pdf?sfvrsn=119f000b_2 - accessed 04.09.2024).

Another important aspect of the strategy is integrating disaster protection measures into other sectors, such as construction and spatial development. Within this approach, all infrastructure and construction projects must be designed to consider potential risks from natural disasters, such as earthquakes, floods, and landslides. The goal is to ensure that new construction projects, as well as existing structures, are built and maintained to be resilient to possible disasters, thereby reducing the risk of loss of life and material damage (See more: https://mvr.bg/docs/librariesprovider43/документи-от-дирекцията/нормативна-уредба/стратегически-документи/rms-strategijanrb.pdf?sfvrsn=119f000b_2 - accessed 04.09.2024).

The National Disaster Risk Reduction Program, developed over five years, is an operational plan for implementing the strategy. The program includes specific activities and measures applied at the national and regional levels, with a special emphasis on reducing risks from significant natural phenomena, such as floods, earthquakes, and forest fires. The program also includes activities in the field of technological disasters, such as nuclear and radiological incidents, aiming to mitigate possible risks and reduce the consequences of these events (Ministry of Interior, 2021).

At the local level, municipal and regional disaster risk reduction programs are key tools for implementing national guidelines and adapting measures to local conditions and specificities. Local governments are responsible for assessing community risks and developing and implementing measures specific to local needs. Accordingly, these programs include building protective embankments, stabilising landslides, improving water supply infrastructure, and taking forest fire prevention measures (Ministry of Interior, 2021).

Risk assessment is a fundamental element of disaster management. This process involves a detailed analysis of potential risks, mapping vulnerable areas, and assessing the impact of potential disasters on the population and infrastructure. Risk assessment must be based on scientific methods and current data and should be regularly updated to adapt to new circumstances and challenges, such as climate change. Assessment is crucial for planning and implementing preventive measures, as well as developing appropriate response and recovery plans.

The National Strategy for Disaster Risk Reduction and the programs derived from it contribute to reducing Bulgaria's overall vulnerability to disasters. It provides a comprehensive framework for the action of all actors in the disaster management system, from national institutions to local governments, thus enhancing society's resilience to disasters and reducing potential losses.

4.4. International Cooperation and Implementation of Disaster Risk Management Exercises

Regarding disaster management, Bulgaria aims to transition from a reactive system to a comprehensive system that integrates all other phases of disaster management. Expert assessment indicates that Bulgaria has the potential to develop a system that equally emphasises prevention, preparedness, and recovery activities, leveraging its existing resources for emergency response while complementing the already developed Disaster Risk Reduction Strategy (Cvetković & Todorović, 2020).

International cooperation in disaster risk management represents a crucial aspect of global and regional efforts to enhance nations' safety and resilience to natural and technological disasters. Bulgaria plays an active role in this field by participating in various bilateral, multilateral, and regional initiatives. Its collaboration with the European Union, neighbouring countries, and international organisations aims to strengthen disaster prevention, preparedness, and response capacities, as well as develop coordination mechanisms for international assistance.

Bulgaria is a significant member of the European Union Civil Protection Mechanism, which allows member states to collectively address disaster challenges through coordinated responses, resource sharing, and participation in joint exercises and training. This mechanism is crucial for large-scale disasters that exceed national capacities, providing a framework for mobilising assistance from other member states. Bulgaria regularly participates in EU-organized exercises to enhance its disaster response capabilities, including those for floods, earthquakes, and wildfires (Ministry of Interior, 2021).

In addition to EU cooperation, Bulgaria is also engaged in bilateral agreements with neighbouring countries, including Serbia, Turkey, and North Macedonia. These agreements cover mutual assistance in disasters, information exchange on potential risks, and joint prevention activities. For example, within the Disaster Preparedness and Prevention Initiative framework for Southeast Europe (DPPI SEE), Bulgaria actively collaborates with other countries in the region to develop disaster risk reduction capacities through training, seminars, and joint exercises (EU, 2022).

One notable example of bilateral cooperation is the EMERSIS I and EMERSIS II projects, which aim to enhance international coordination in disaster risk management and build response capacities in cross-border situations. These projects are implemented in partnership with neighbouring countries, including Serbia and Romania, and include joint exercises, improving communication systems, and developing joint response plans (EU, 2022).

Bulgaria has also participated in several concrete international missions in response to disasters in neighbouring countries. One example is the involvement of the Bulgarian civil protection team during the floods in the Republic of Serbia in 2014, where teams deployed high-capacity pumping modules in two shifts, with 28 and 22 crew members, respectively. This mission helped remove significant amounts of water from flooded areas, reducing damage and health risks for the population (EC, 2014). Similar missions were conducted in the Republic of North Macedonia during the 2016 floods and in combating wildfires in 2021, where Bulgarian teams sent firefighting modules and vehicles (EU, 2020).

Furthermore, Bulgaria actively participates in INTERREG-IPA CBC programs funded by the European Union to enhance cross-border cooperation and disaster response readiness. Programs like INTERREG-IPA CBC Bulgaria-Serbia and Bulgaria-Turkey include activities such as building flood prevention infrastructure, improving communication systems for early warning, and organising joint disaster training and simulations (See more at Bulgarian-Serbian Strategy Analysis and Activity Book - accessed 15.09.2024).

Bulgaria enhances its disaster prevention and response capabilities through these activities, while contributing to regional and global security. International cooperation facilitates the exchange of experiences, joint training, and coordination in crises, significantly enhancing nations' ability to address the challenges of natural and technological disasters.

4.5. Analysis of the Disaster Risk Management System in Bulgaria

The territory of the Republic of Bulgaria is exposed to numerous disasters (Nikolova, 2023; Simova et al., 2018; Trifonova et al., 2023; Velichkova, Simova, Angelova, & Uzunova, 2021; Василева et al., 2019). Bulgaria faces risks from river floods, urban flooding, and wildfires. There is a moderate risk of earthquakes, water shortages, and extreme heat, as well as a low risk of landslides, coastal floods, and storms. Floods are the natural hazards with the highest frequency. Flood risks are more significant near river systems, while the risk of drought and wildfires is higher in inland areas. High levels of inequality and access issues to healthcare systems, cooling systems, and other essential services can affect people's ability to withstand hazards. Although recent years have seen progress in international cooperation with organisations like the European Union and NATO, several key strengths and weaknesses can be identified within Bulgaria's disaster risk management system (Cvetković & Todorović, 2020).

4.5.1. Analysis of the Strengths of the Disaster Risk Management System in Bulgaria

One of Bulgaria's strengths in disaster management is its established system that encompasses all key phases: preparation, response, and post-disaster recovery. This comprehensive approach enables effective risk reduction from disaster impacts and ensures quick and coordinated responses during emergencies. Additionally, active government collaboration with the scientific community in earthquake risk assessment is beneficial, as it enables the precise identification of potential hazard zones and the timely implementation of protective measures. This approach helps Bulgaria mitigate risks to people and infrastructure, strengthening its resilience to natural disasters.

Successful international cooperation, primarily through participation in the European Union Civil Protection Mechanism and projects such as SHARE, DACEA, and ESNET, enables Bulgaria to access cutting-edge technologies and practices in earthquake risk management, thereby improving public awareness and response capacity during disasters. These projects contribute to enhanced protection and development of early warning systems, making Bulgaria a notable example in the region (Trifonova et al., 2023).

The National Platform for Disaster Risk Reduction (DRR) in Bulgaria provides a robust institutional framework for integrating disaster risk reduction (DRR) into national and local policies. In the Bulgarian context, the DRR Council under the Council of Ministers serves as the national platform, led by the Minister of Internal Affairs. According to available information, Bulgaria's national platform operates at a high level, incorporating civil society and the academic community, and supports a multisectoral approach to disaster risk management. This model facilitates active collaboration between state institutions and other societal actors, ensuring that DRR strategies are successfully implemented across all societal levels. Including the academic community also allows access to the latest research and knowledge in this field, further strengthening capacities for risk assessment and management of natural and technological disasters (See more: https://iacp-sofia.mvr.bg/docs/librariesprovider43/намаляване-на-риска-от-бедствия/ocenka_nac-strategia_nrb-06042022.pdf?sfvrsn=e6345d6d_4 - accessed 17.09.2024).

Another important strength of Bulgaria's disaster management system is the development and operational capacity of the emergency response system for nuclear incidents, which was developed by the National Institute of Meteorology and Hydrology under the Bulgarian Academy of Sciences. This system allows quick and effective responses to potential nuclear threats, which are crucial for protecting public health and safety. This approach ensures the possibility of timely interventions and minimising harmful effects on the population and environment in the event of nuclear incidents (Syrakov, Prodanova & Slavov, 2004).

Large-scale floods in Bulgaria, primarily of the rain-river type, occur due to favourable conditions for accumulating large water masses in river valleys. The organisation and conduct of rescue actions include providing first aid to all affected people in flooded areas, evacuating survivors to other settlements, and implementing hygienic-epidemiological measures. The coordination of medical assistance actions, as well as the management and logistics of healthcare institutions, is the responsibility of the director of the Regional Health Inspectorate (RZI) of the respective area. Knowledge, regular

updates, and the development of modern approaches to flood prevention and protection are of utmost importance in flood conditions.

4.5.2. Analysis of the Weaknesses of the Disaster Risk Management System in Bulgaria

Despite its strengths, Bulgaria's disaster risk management system has several significant weaknesses. One of the main drawbacks is the lack of coordination among the various institutions involved in disaster protection. Local authorities often lack sufficient resources and capacities to adequately implement risk reduction measures, leading to ineffective responses to emergencies at the local level (See more: https://mvr.bg/docs/librariesprovider43/документи-от-дирекцията/нормативна-уредба/стратегически-документи/rms-strategijanrb.pdf?sfvrsn=119f000b_2 - accessed 18.09.2024).

Although Bulgaria has access to European funds, there are challenges in effectively absorbing these funds. Weak administrative capacity at both national and local levels hinders the use of available resources for disaster prevention and recovery. This issue is further complicated by the lack of a comprehensive spatial risk database, which impedes the planning of preventive measures and identification of the most vulnerable areas (See more: https://mvr.bg/docs/librariesprovider43/документи-от-дирекцията/нормативна-уредба/стратегически-документи/rms-strategijanrb.pdf?sfvrsn=119f000b_2 - accessed 18.09.2024).

A significant problem is the lack of public awareness regarding natural disaster risks. Many citizens are not adequately informed on how to respond to emergencies, which reduces the effectiveness of early warning systems and risk awareness efforts.

The disaster risk management system in Bulgaria's rural areas faces numerous challenges that threaten these regions' socio-economic and demographic development. One key aspect is the negative impact of natural disasters, such as floods, fires, and earthquakes, which disrupt the population's basic living and working conditions. These events not only cause material damage but also impact the demographic structure of rural areas, where there is a continuous decline in population due to high mortality and low birth rates, further contributing to an ageing population process (Tsonkov et al., 2023).

As of 2024, demographic trends in Bulgaria indicate an increase in the mortality rate to 14.9‰ and a decrease in the birth rate to 8.6%, creating additional challenges for the sustainability of rural communities. The ageing population, predominant in these areas, requires special attention regarding healthcare and risk management, as their need for medical services is higher due to the prevalence of chronic diseases (Kapucu, Hawkins & Rivera, 2013).

Forest fires, whose frequency and intensity have increased significantly, pose a particular problem. In recent decades, the number of fires has increased sixfold, while the burned area has expanded by thirty-five times compared to previous decades. This trend indicates a serious ecological crisis that worsens the economic and social conditions in rural areas of Bulgaria (Tsonkov et al., 2023).

Managing these risks requires an integrated approach, including monitoring and taking preventive measures such as cleaning riverbeds and maintaining forests in sparsely populated areas. Additionally, strengthening infrastructure in rural communities is crucial for improving living conditions and mitigating the effects of natural and ecological risks (Tsonkov et al., 2023). However, the current disaster risk management system reveals weaknesses in terms of coordination and implementation of these measures, underscoring the need for stronger institutional mechanisms and better integration into the development planning process for rural areas.

In summary, for Bulgaria to overcome the weaknesses in its disaster risk management system and provide an adequate response, it is necessary to improve coordination among relevant institutions to ensure more effective cooperation in emergency management. Secondly, it is essential to increase resources and provide training for local authorities, enabling adequate implementation of protective measures. Thirdly, strengthening administrative capacities is crucial for effectively absorbing funds from European sources.

Additionally, establishing a comprehensive spatial risk database is a crucial step toward more effective planning of preventive measures. Ultimately, it is crucial to enhance public awareness of

natural disaster risks through educational campaigns, thereby contributing to the effectiveness of early warning systems and informed citizen responses in crises.

5. The Disaster Risk Management System in Romania

5.1. Basic Characteristics (Geographical, Climatic, Hydrometeorological) of the Bulgarian Region

Romania is a country with diverse geographical, climatic, and hydrometeorological characteristics that play a key role in shaping its natural and economic landscape (Morar et al., 2021; Posea & Bucharest, 1975; Zoran, Zoran, Dida, & Dida, 2012). Geographically, Romania is located in Southeastern Europe, occupying the central part of the Balkan Peninsula. It covers an area of approximately 238,397 square kilometres and has varied topography. The central part of the country is dominated by the Carpathian Mountains, which span two-thirds of its territory. Mountainous areas are surrounded by plains and hills, with the largest plain being the Wallachian Plain, located in the southern and eastern parts of Romania. To the east lies the Danube River, which serves as a significant natural border and a vital source of life support before flowing into the Black Sea (Sandu, Mateescu, & Vătămanu, 2010, p. 406).

Romania's climatic characteristics are of a continental type, with significant influences from the Carpathians, the Danube Plain, and the Black Sea. During winter, temperatures can be extremely low, especially in mountainous areas, while summers are warm and relatively dry, particularly in lowland and coastal regions. Average annual temperatures vary depending on the region – in the plains, they are around 10-11°C, while in the mountainous areas, they drop to around 2-6°C. Romania also experiences significant temperature fluctuations between summer and winter (Cheval et al., 2022).

Hydrometeorological conditions in Romania are characterised by unevenly distributed annual precipitation across the country. The average annual precipitation is approximately 600-700 mm, but in mountainous areas, it can reach up to 1,400 mm. The Danube River plays a central role in the country's hydrographic system, forming a significant part of the river network. Romania is frequently affected by flooding, particularly in areas surrounding the Danube and in the plains (Cheval et al., 2022). Additionally, snowfall in the Carpathians is important for water accumulation and impacts the country's hydrology (SFÎCĂ, 2013).

5.2. Normative and Institutional Framework for Disaster Risk Management

The normative and institutional framework for disaster risk management in Romania is defined by the Civil Protection Law. Civil protection is a component of the national security system, encompassing a series of activities, measures, and organisational tasks aimed at preventing and mitigating disaster risks, and protecting the population, material goods, and the environment from the negative effects of emergencies and armed conflicts. This system involves planning, organising, and implementing measures by the law to preserve lives and assets, and to ensure the necessary conditions for the survival of the affected population (See more: https://legislatie.just.ro/Public/DetaliiDocument/56923 - accessed 15.10.2024).

Civil protection in Romania is considered a matter of national interest, has a permanent character, and is based on the obligations of central and local public authorities, as well as other legal entities and citizens. The management of civil protection activities is organised at both local and national levels, with key tasks including risk identification in various areas, informing the population about hazards, organising interventions in emergencies, and mitigating the negative effects of disasters and explosive remnants of armed conflicts (See more: https://legislatie.just.ro/Public/DetaliiDocument/56923 - accessed 15.10.2024).

The Emergency Situations Ordinance regulates the establishment of structures for emergency management at both central and territorial levels. These structures are responsible for coordination,

planning, and supporting the decision-making process, and are organised hierarchically according to administrative-territorial divisions and areas of responsibility. Under the leadership of the Prime Minister, the National Committee for Emergency Situations functions, while the General Inspectorate for Emergency Situations, under the Ministry of Internal Affairs, serves as the technical body responsible for planning, monitoring, and managing interventions (See more: https://legislatie.just.ro/Public/DetaliiDocument/178900 - accessed 15.10.2024).

At the territorial level, county and local emergency committees serve as support bodies for decision-making, holding temporary or permanent roles. These committees oversee public emergency services, while central and local authorities play a crucial role in crisis management, encompassing measures for prevention, preparedness, response, and damage restoration.

In Romania, the risk management system encompasses various institutions at central, county, and local levels of public administration, grouped under the collective term National System for Emergency Situations Management (SNMSU). The response capability of all SNMSU components is equally important, given the different types of risks and their impact on life, the environment, and sustainable development (Comitetul Național pentru Situații de Urgență, 2020).

The system is established to ensure effective management of current emergencies that threaten or affect life, as well as in the case of disasters. Distributed responsibility among agencies, a established command and control system, an integrated decision-making process, and unified coordination of response actions characterize the SNMSU. Activation of various levels of authority (national/county/local) is determined based on the severity of the emergency, following the principle of gradual action ("think globally/act locally") and requesting support "from the bottom up," from the level whose response capacity is exceeded to higher levels. In many situations, direct activation and action at the national level are possible to ensure adequate engagement of resources for intervention, including regional or national resources or their deployment in or near the affected area (Comitetul Național pentru Situații de Urgență, 2020).

The components of the National System for Emergency Situations Management are: The committees for Emergency Situations; the Department for Emergency Situations, the General Inspectorate for Emergency Situations, Professional and Volunteer Emergency Services; Operational Centers and Coordination and Management Centers for Interventions; Operational Centers for Emergency Situations; and the Incident Commander (Comitetul Național pentru Situații de Urgență, 2020).

The National Committee for Emergency Situations is an interdepartmental body within the national emergency management system. It is chaired by the Minister of Internal Affairs, with members being ministers and heads of central public institutions.

The organisation of the system aligns with Romania's obligations as a signatory to international treaties and agreements, particularly as a member state of the European Union, given the cross-border nature of modern risks.

5.3. Strategic and Planning Framework for Disaster Risk Management

The National Emergency Prevention Strategy assesses the current state of risk factors in Romania's territory, formulates principles and priority action directions, and outlines the resources necessary for managing emergencies. The primary goal of the strategy is to strengthen the capacities of specialized institutions and local and national public administration bodies to prevent emergencies, manage them, and achieve general objectives focused on saving lives, creating an integrated emergency response system, enhancing the role of local public administration, and ensuring the proper functioning of critical infrastructure (See more: https://legislatie.just.ro/Public/DetaliiDocument/285383 - accessed 16.10.2024).

Alongside general goals, several specific objectives are set, depending on the risks generating emergencies, such as natural, technological, or fire risks. The strategy calls for reinforced measures to enhance the safety of people, communities, and assets by identifying, registering, and assessing

types of risks; informing interested parties; warning the population; limiting, removing, and suppressing risk factors; and mitigating the adverse effects and impacts of exceptional events.

Due to the frequency of floods and their increasing impact on the population, coupled with the adoption of Directive 2007/60/EC on the assessment and management of flood risks, Romania developed the National Flood Risk Management Strategy. This strategy has an implementation period from 2010 to 2035, with a budget of approximately € 17 million. It aims at integrated water management, spatial planning, urban development, biodiversity protection, agricultural and forestry development, protection of transport infrastructure, and safeguarding construction and tourist areas. This strategy outlines the necessary measures to reduce risks associated with hazardous hydrometeorological events, including the development of flood hazard and risk maps, the preparation of basin management plans for flood risk, and the updating of local and county flood defence plans. Flood hazard and risk maps were completed in 2014, and risk management plans were developed for the period 2016-2021 (See more: https://sgg.gov.ro/1/wp-content/uploads/2024/07/ANEXA-17.pdf - accessed 16.10.2024).

The primary objective of flood risk management plans is to mitigate the adverse impacts of floods on citizens' safety, public health, economic activities, the environment, and cultural heritage. These plans encompass structural and non-structural measures across five key areas of action: prevention, protection, preparedness, public awareness, and restoration and reconstruction. Measures are divided into three categories based on their level of application: national, basin level, and areas with potential risk of significant flooding (Comitetul Național pentru Situații de Urgență, 2020).

Structural measures aim to protect, prevent, and mitigate the effects of floods. Their goal is to reduce peak water levels and flood duration, thereby safeguarding material assets and the population from major floods. Implementing these measures requires a considerable amount of time and involves extensive analysis from technical, economic, environmental, and social perspectives.

The importance of non-structural measures and green infrastructure is increasingly emphasized at the European level due to its benefits. Natural flood management measures, such as increasing storage capacity for floodwater, provide ecological services simultaneously. These measures, known as natural water retention measures, support green infrastructure.

According to professional literature, non-structural measures are categorised into two types: measures to reduce flood probability (reducing hazard) and measures to enhance flood resilience. Hazard reduction measures include afforestation, slope terraces with orchards or vineyards, perpendicular agricultural work on slopes, anti-torrent and erosion work, and preventing new buildings in flood-prone areas. Resilience-enhancing measures include raising community awareness, flood forecasting, emergency management, and regulatory measures for buildings in flood zones, such as consolidating or elevating houses and waterproofing structures (Comitetul Național pentru Situații de Urgență, 2020).

The National Strategy to Combat Drought was created in response to vulnerabilities revealed by the severe drought in Romania in 2007, which particularly highlighted communities' inability to absorb and recover from its effects. To shift from passive to active risk management, Romania adopted specific measures to mitigate the impact of drought and reduce the vulnerability of affected areas (See more: https://legislatie.just.ro/Public/DetaliiDocument/84536 - accessed 17.10.2024).

To this end, the National Committee for Combating Drought, Land Degradation, and Desertification was established in 2008 and, in 2010, laid the foundation of the National Strategy aimed at preventing and combating drought effects in the short, medium, and long term (See more: https://legislatie.just.ro/Public/DetaliiDocument/84536 - accessed 17.10.2024).

The main objectives of the strategy include: Collecting necessary resources to prevent and mitigate the effects of drought (ensuring continuity of economic and social activities); Improving access to drinking water; Creating a systemic framework for effective drought management in the short and medium term (See more: https://legislatie.just.ro/Public/DetaliiDocument/84536 - accessed 17.10.2024).

In 2020, to enhance drought-related emergency management, a regulation governing the management of emergencies caused by hazardous meteorological phenomena was enacted. This regulation governs the process of identifying, assessing, and managing the risk of soil drought, and establishes procedures for alerting and rapidly intervening in the event of such an occurrence (Comitetul Național pentru Situații de Urgență, 2020).

The National Climate Change Strategy - Climate change has become an actual component of life on our planet, with its negative effects being felt both economically and socially. According to the latest special report by the Intergovernmental Panel on Climate Change (IPCC), published on October 8, 2018, limiting global warming to 1.5°C requires specific actions and measures to prevent and mitigate impacts across all socio-economic sectors. Reducing global warming to 1.5°C compared to 2.0°C would bring significant benefits to people and natural ecosystems, ensuring sustainable and equitable societal development. Anthropogenic CO2 emissions would need to decrease by about 45% by 2030 compared to 2010 levels, aiming to reach net zero around 2050 (See more: https://www.mmediu.ro/categorie/strategia-nationala-privind-adaptarea-la-schimbarile-climatice-pentru-perioada-2022-2030/419 - accessed 17.10.2024).

Faced with the scale of these phenomena and the associated dangers, countries worldwide are engaging in activities and programs aimed at mitigating the global impact of climate change. EU member states undertake climate-related projects and actions in various sectors, including industrial, agricultural, urban, forestry, and transport sectors.

As a member of the European Union, Romania is reasonably involved in this international effort. The Ministry of Environment, Water, and Forests plays an important role in fulfilling these commitments. The National Climate Change Strategy, along with economic growth based on reducing carbon emissions, represents the starting point in this mission, offering Romanian authorities support, vision, and guidelines for future concrete actions (See more: https://www.mmediu.ro/categorie/strategia-nationala-privind-adaptarea-la-schimbarile-climatice-pentru-perioada-2022-2030/419 - accessed 17.10.2024).

This strategy addresses two key aspects of the climate effort: prevention and combating the effects of climate change (through actions aimed at reducing greenhouse gas emissions), as well as adequate adaptation with minimal damage in the context of existing climate changes. The adaptation component includes Romania's efforts to mitigate the risks of forest fires, drought, hail, and floods, as well as activities in disaster risk assessment at the national level and the creation of risk maps. These issues are also addressed in other official documents and regulations.

5.4. International Cooperation and Implementation of Disaster Risk Management Exercises

International cooperation and disaster risk management exercises in Romania are part of broader European and global initiatives aimed at enhancing resilience and reducing disaster risk. Romania is actively involved in various programs through collaboration with the European Commission, particularly within the European Union Civil Protection Mechanism (UCPM). This mechanism allows member states to collaborate on strategy development and share best practices in disaster risk management (Comitetul Național pentru Situații de Urgență, 2020).

Specifically, thematic assessments have been conducted in Romania, involving independent experts who review disaster risk reduction strategies and systems, and provide recommendations for further improvements. The main focus is on risk management and prevention measures, which include engaging civil society and developing community resilience capacities at the local level.

This type of cooperation is significant as it enables countries like Romania to improve their systems and be better prepared for natural and technological disasters, such as earthquakes and floods, which frequently impact the region.

Within NATO, Romania participates in initiatives such as the Euro-Atlantic Disaster Response Coordination Centre (EADRCC), which coordinates international disaster assistance among member countries (See more: https://www.atlanticcouncil.org/blogs/new-atlanticist/six-reasons-natos-eu-

ro-atlantic-disaster-response-coordination-centre-is-important-for-our-future-security/ - accessed 19 October 2024). This engagement enhances Romania's ability to cooperate during crises, including natural disasters such as earthquakes and floods.

At the EU level, Romania participates in various civil protection exercises, including those coordinated under the EU Civil Protection Mechanism, such as the "Modex" exercises (See more: https://agenceurope.eu/en/bulletin/article/12117/12 - accessed 19.10.2024). These simulations improve Romania's readiness and coordination in cross-border emergency responses.

Romania also integrates its national strategies, led by the Department for Emergency Situations (DSU), into global frameworks, collaborating with international bodies such as the United Nations Office for Disaster Risk Reduction (UNISDR) to mitigate and manage risks such as earthquakes, forest fires, and chemical incidents (Comitetul Național pentru Situații de Urgență, 2020).

5.5. Analysis of the Disaster Risk Management System in Bulgaria

The analysis of Romania's disaster risk management system reveals significant strengths within its institutional structures and national-level cooperation but also highlights certain deficiencies that require improvement.

5.5.1. Analysis of the Strengths of the Disaster Risk Management System in Bulgaria

According to available sources, one of the main strengths of Romania's disaster risk management system is its integrated approach, which encompasses cooperation among various institutions at national, regional, and local levels, as well as international collaboration with the European Union and other organisations. Over the past few decades, Romania has developed a robust risk management system, particularly in response to natural disasters, including earthquakes and floods. Additionally, Romania has a solid legal foundation that enables the implementation of various measures for disaster risk reduction, including evacuation plans and rapid response mechanisms. One important aspect of the system is the involvement of the public and local communities in the risk management process, which contributes to the quicker and more effective implementation of preventive measures.

The World Bank and the European Union have repeatedly supported Romania's efforts to improve its disaster risk management system through funding various programs and projects (See more https://www.worldbank.org/en/news/loans-credits/2018/06/26/romania-disaster, accessed October 20, 2024). These projects include emergency response training for personnel, as well as technical assistance in planning and coordinating risk reduction measures.

A key aspect of the system is effective coordination between different levels of government (local, regional, and national) and the integration of early warning and planning systems. Romania has also demonstrated a strong capacity to respond to floods and earthquakes, although there remains a need for greater investment in prevention and the local implementation of risk management strategies. Research indicates that Romania has significantly improved its disaster risk management system in the last decade, partly thanks to international support and cooperation (Diaconu, 2022).

5.5.2. Analysis of the Weaknesses of the Disaster Risk Management System in Bulgaria

Romania's disaster risk management system faces significant weaknesses that impact the effectiveness of prevention, response, and recovery in cases of natural and technological disasters. The strategies and mechanisms established in this field are often insufficiently integrated, which reduces the system's capacity to respond adequately to crises.

Researchers highlight several challenges in implementing risk reduction measures, including a lack of resources at the local level and limited opportunities to educate the population about risks. Additionally, infrastructure improvements and the application of modern technologies in early warning and prevention systems are necessary (Oniga et al., 2020).

According to a World Bank report, there are several key areas where Romania needs to improve its disaster risk management approaches. The first significant weakness is a lack of adequate funding for preventive measures, resulting in insufficient infrastructure and resources necessary for an effective disaster response. Even when certain measures are taken, a lack of coordination often exists between different institutions, which complicates the implementation of programs at the local level (World Bank, 2021).

Second, analyses have shown that awareness and community involvement in the disaster risk management process are limited. The lack of local population engagement in planning and implementing strategies affects the effectiveness of these strategies. Studies indicate that communities actively involved in decision-making related to risks are more likely to respond appropriately in crises (Norris et al., 2008). There are also technical weaknesses within the system, including inadequate training for personnel managing crises and insufficient testing of disaster response plans. These weaknesses can lead to inappropriate or delayed responses to disasters, increasing the risk of loss of life and property (Zulean & Prelipcean, 2013).

Romania must also reconsider its international partnerships to strengthen its disaster risk management capacities. Exchanging best practices and experiences with other countries can significantly contribute to improving the existing system and reducing the weaknesses currently present.

6. The Disaster Risk Management System in Albania

6.1. Basic Characteristics (Geographical, Climatic, Hydrometeorological) of the Bulgarian Region

Albania is situated in the western Balkans, bordering the Adriatic and Ionian Seas, which confer upon it specific geographical and climatic characteristics. Much of the territory is covered by mountains and hills, while the coastal belt is relatively narrow and flat. Albania is known for its diverse terrain, which includes mountains such as the Prokletije in the north and the Pindus in the southern regions (Federal Research Division, Library of Congress, 1994).

Albania's climate varies depending on terrain and proximity to the sea. Along the coast, a Mediterranean climate prevails, characterised by mild winters and warm summers, while inland, particularly in mountainous areas, a continental climate prevails, with cold winters and cool summers. Due to this climate diversity, Albania is exposed to various natural disasters, such as summer droughts and winter floods, particularly in river valleys like those of the Drin and Vjosa rivers (Mankolli et al., 2008).

Hydrometeorological characteristics are significant for Albania due to frequent floods and seasonal droughts. High levels of rainfall in mountainous areas often result in rapid and substantial water inflows into rivers, leading to flooding in lower regions (Cekrezi, 2024). Climate change further exacerbates these phenomena, making hydrometeorological hazards increasingly frequent and severe. Albania is also susceptible to earthquakes due to its location in active seismic zones, making natural disasters a notable risk for the country.

6.2. Normative and Institutional Framework for Disaster Risk Management

The disaster risk management system in Albania is a key component of the national security policy, aimed at mitigating the impact of natural and technological disasters. It is based on a robust regulatory framework and institutional structure that aligns with international standards and European regulations.

The normative, or legal, framework for disaster risk management in Albania is defined by a series of laws, regulations, and decisions that provide the basis for action in this field. Law No. 45/2019 on Civil Protection (Government of the Republic of Albania, 2019) is the primary document regulating all aspects of disaster risk management, from prevention to response and recovery. This law replaces previous regulations and is harmonized with international documents such as the Sendai

Framework for Disaster Risk Reduction 2015-2030 (United Nations Office for Disaster Risk Reduction, 2015), adopted globally under the auspices of the United Nations.

Law 45/2019 establishes mechanisms for enhancing disaster response capacity and strengthening international cooperation. This law provides clear procedures for activating international assistance mechanisms, such as the European Union Civil Protection Mechanism, in line with Council Decision No. 1313/2013/EU (Council of the European Union, 2013), which regulates civil protection within the EU.

The institutional framework for disaster risk management in Albania is based on coordination among multiple national and local institutions. The National Agency for Civil Protection (AKMC), operating under the Ministry of Interior, plays a central role in this system. The AKMC coordinates all disaster risk reduction activities, planning, organizing exercises, and educating the public. AKMC has a central role in implementing national and international standards in this field, as well as in collaborating with international organizations (See more: https://akmc.gov.al/rreth-akmc/ - accessed 23.10.2024).

In addition to AKMC, the disaster management system includes local municipalities that are responsible for implementing preventive and response measures at the local level. They work in close collaboration with state institutions, civil society, and non-governmental organizations that support education and empower communities for disaster response.

6.3. Strategic and Planning Framework for Disaster Risk Management

Albania is vulnerable to various natural disasters, including earthquakes, floods, wildfires, landslides, snowstorms, droughts, extreme temperatures, epidemics, avalanches, technological hazards, and storms. Recent data indicate that Albania's vulnerability to disasters has increased exponentially, with many of these hazards turning into significant emergencies or disasters over the past decade.

Numerous reports and documents highlight the high levels of risk, exposure, and vulnerability Albania faces, alongside a limited capacity for coping and adaptation. In this regard, the lack of a strategic approach to Disaster Risk Reduction (DRR) is evident, with the absence of a National Disaster Risk Reduction Strategy (NDRRS) noted in successive European Commission Progress Reports for Albania, including the latest Progress Report 2021. These reports stress the need for a strategic preparedness document, which is also outlined in the National Strategy for Development and Integration (NSDI) for the 2015-2020 period (See more: https://www.undp.org/sites/g/files/zskgke326/files/202401/permbledhje_en_clear_8.6.2023.pdf - accessed 23.10.2024).

Albania's national disaster risk management framework includes developing and implementing the National Disaster Risk Reduction Strategy, spanning 2023 to 2030. This strategy lays the foundation for a comprehensive approach to risk reduction, covering legal, institutional, and operational aspects. Key institutions, such as the National Civil Protection Agency (NCPA), play a vital role in coordinating efforts among various ministries and local authorities (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 23 October 2024).

As part of the DRR Strategy, an Action Plan for Disaster Risk Reduction for 2023-2027 has been developed, operationalising the strategy's implementation. The Action Plan outlines an indicative financial framework for each activity or project cost, based on market research and proponents' experiences. It addresses six identified risks under the strategy's scope until 2030, with priority actions for each risk to be completed by 2027. In addition to individual risk management activities, the Action Plan includes groups of activities that impact multiple risks simultaneously, such as enhancing disaster risk management governance (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 23 October 2024).

Recently, Albania has focused on developing strategic projects related to disaster risk management to fulfil its obligations as a member of the European Union Civil Protection Mechanism (EU

CPM). This mechanism promotes cooperation and support among member states in responding to disasters, and Albania aims to enhance its capabilities, particularly through the establishment of new response modules, such as a "Drone Response Team."

Additionally, Albania has taken steps to introduce a unified emergency number, 112, nationwide, representing a significant advancement in synchronising emergency responses. This initiative aims to improve the accessibility and efficiency of services in emergencies, which is crucial given the frequent natural disasters in the region (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 23 October 2024).

The development of Albania's civil protection system also includes adopting policies and legislation that support effective risk management. Defining priority standard operating procedures for the civil protection system is crucial for enhancing coordination and the effective implementation of measures during emergencies.

Despite these efforts, a need remains to strengthen data collection and exchange on disaster losses. Through the DesInventar system, Albania can enhance its capacity for risk analysis and develop effective prevention strategies. Furthermore, raising public awareness and education on disaster preparedness must be a priority, thus reinforcing the capacity to respond to critical situations (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 24.10.2024).

Strategic projects also include initiatives like Alb-Adapt, which focuses on climate services and adaptation. This project is crucial for enhancing Albania's resilience to natural disasters and mitigating future risks. Overall, the Albanian disaster risk management system is undergoing significant reforms and improvements aimed at making it more efficient and resilient to the challenges posed by natural disasters (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 24 October 2024).

Preparing risk assessment documents at the district (qark) level is essential in developing Albania's disaster risk management system. These documents serve as a basis for identifying, analysing, and managing disaster-related risks, and include legal aspects of critical infrastructure. Additionally, strengthening readiness and response in emergencies involves training and equipping operational forces (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 24.10.2024).

Reinforcing the resilience of critical infrastructure and public buildings is crucial for mitigating the impacts of disasters. This involves improving data on disaster losses and managing risk information, thus creating a stronger foundation for future planning and interventions.

The rehabilitation of the hydrometeorological network, including 16 stations within the World Bank's "Disaster Risk Mitigation and Adaptation Project," represents a critical step in enhancing forecasting and disaster response capabilities. This effort is further supported by strengthening rescue and protection services and promoting volunteerism (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 24.10.2024).

Organising training and exercises is crucial to enhancing the preparedness capabilities of operational forces. Additionally, technical support for the Ministry of Trade and Economy (MTE) in negotiations related to Chapter 27 is vital for implementing strategic plans (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf—accessed 24.10.2024).

Research, development, and implementation of a National Incident Management System (NIMS) will be crucial in strengthening Albania's disaster and emergency management capacity, contributing to a comprehensive system for protecting against natural and technological risks.

Albania has laid a solid foundation for disaster risk management, yet further research and practice are needed to ensure resilience and the safety of its citizens. This strategy necessitates continuous adaptation and evolution to keep pace with changes in both natural and societal conditions.

6.4. International Cooperation and Implementation of Disaster Risk Management Exercises

International cooperation is a key component of Albania's disaster risk management system. Albania is a signatory to numerous multilateral and bilateral agreements on disaster risk reduction (DRR) and civil protection, strengthening collaboration with neighbouring countries and international organisations.

Albania has made significant progress in international cooperation within the context of Disaster Risk Reduction (DRR), particularly after opening negotiations for European Union membership in 2022. In recent years, international cooperation has gained importance, as demonstrated by the intensification of activities in this area and alignment with global standards, such as the Sendai Framework for Disaster Risk Reduction (See more: https://ec.europa.eu/commission/presscorner/api/files/document/print/en/ip_22_6944/ip_22_6944_en.pdf - accessed 25 October 2024).

Notably, Law No. 45/2019 addresses civil protection and disaster risk reduction. This law introduced a modern approach to international cooperation, encompassing the receipt of international assistance and obligating Albania to provide assistance to other countries. The law is aligned with European regulations, specifically with Council Decision No. 1313/2013/EU, which regulates the EU Civil Protection Mechanism and includes the obligation to provide humanitarian aid and establish capacities for emergency response (See more: https://www.mod.gov.al/images/akteligjore/mbrojtja-civile/Ligji-45-2019-Per%20Mbrojtjen-Civile.pdf - accessed 25.10.2024).

Albania has actively participated in numerous international conventions, agreements, and programs related to disaster risk reduction (DRR) and civil protection. This includes substantial cooperation with the European Union through the Civil Protection Mechanism, as well as through other international initiatives, such as the Euro-Atlantic Disaster Response Coordination Centre (EADRCC) within NATO. This collaboration enables Albania to receive prompt and effective international aid during significant disasters, such as earthquakes, floods, and fires, and to assist other countries, aligning with its strategy to strengthen disaster risk reduction (DRR) capacities (See more: https://www.nato.int/cps/en/natohq/search.htm?query=ALBANIA&submitSearch - accessed 25.10.2024).

In recent years, Albania has repeatedly activated these mechanisms in response to major natural disasters, such as floods and earthquakes, underscoring the importance of international cooperation in this field.

6.5. Analysis of the Disaster Risk Management System in Albania

The analysis of Albania's disaster risk management system highlights significant strengths in implementing strategic planning and collaboration at the national level. However, it also points to certain shortcomings that require improvement. These strengths are reflected in Albania's well-developed institutional and legislative framework, which facilitates coordinated disaster response and preparedness across multiple agencies. Notably, the "Action Plan for Disaster Risk Reduction 2023–2027" exemplifies Albania's commitment to proactive risk management, covering various hazards and aiming to enhance resilience infrastructure, early warning systems, and risk monitoring.

On the other hand, challenges remain, particularly in areas such as financial resources, technical capacity, and inter-agency coordination. Addressing these weaknesses, primarily through better funding, technological upgrades, and streamlined data-sharing practices, would strengthen Albania's overall disaster resilience and response effectiveness.

6.5.1. Analysis of the Strengths of the Disaster Risk Management System in Albania

An in-depth analysis of Albania's disaster risk management system underscores significant strides in several key areas. Notably, Albania has established an institutional and legislative framework that fosters integrated risk management, involving a range of institutions, including the National Agency for Civil Protection, the Ministry of Defence, and other state structures. This frame-

work facilitates the coordination of activities and efficient management of natural and technological disasters, including earthquakes, floods, fires, and technological accidents.

One of the main strengths of the system is the implementation of strategic planning, exemplified by the "Action Plan for Disaster Risk Reduction 2023–2027," which covers various aspects of risk, including earthquake, fire, flood, landslide, and technological disaster risks. This plan enhances institutional cooperation and introduces measures to strengthen infrastructure resilience, as well as to improve early warning and risk monitoring systems (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 25.10.2024).

Albania's active participation in international cooperation, particularly through the exchange of experiences and resources within the Balkan region, underscores the value of collaboration in disaster management. This cooperation, which contributes to more effective disaster response and ensures better utilization of shared resources, is a testament to the importance of regional partnerships. For example, cooperation with neighbouring countries in forest fire protection and natural disaster response has enhanced Albania's capacity for disaster risk management.

6.5.2. Analysis of the Weaknesses of the Disaster Risk Management System in Albania

An analysis of Albania's disaster risk management system reveals several critical areas that urgently require improvement to ensure better efficiency and resilience in the face of disasters. These weaknesses, stemming from financial, infrastructural, and technological challenges, as well as organizational and administrative shortcomings, highlight the pressing need for action.

The first major weakness is the insufficient financial resources allocated to the disaster risk management sector. Although there are national plans and strategies, such as the "Action Plan for Disaster Risk Reduction 2023–2027," the lack of adequate budget allocations hampers their full implementation. This mainly affects the provision and modernization of early warning systems and the training of emergency response services (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 26.10.2024).

The second weakness relates to insufficient technical capacities for disaster risk management. Many local services are not adequately equipped with the modern technology necessary to respond rapidly to disasters, such as floods, fires, and earthquakes. In some cases, even when technology is available, issues with proper utilization arise due to a lack of training (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 26.10.2024).

A third weakness is inadequate coordination among various institutions involved in disaster risk management. Although an institutional framework has been established, coordination between central and local authorities is often ineffective, leading to delayed responses in emergency situations. This is particularly problematic in the context of managing large-scale natural disasters, where quick intervention is crucial to minimize damage and losses (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 26.10.2024).

Another significant challenge lies in data collection and sharing. The lack of up-to-date and comprehensive data on disaster risks and natural hazards hinders planning and decision-making processes. Additionally, there is a need to improve capacities for data collection and analysis, which would allow for more precise risk assessments and more effective protective measures (See more: https://www.undp.org/sites/g/files/zskgke326/files/2024-01/permbledhje_en_clear_8.6.2023.pdf - accessed 26.10.2024).

The final major weakness pertains to the culture and risk awareness within communities. Despite efforts to raise public awareness of the importance of preventive measures and disaster preparedness, many communities are still not sufficiently informed or aware of the dangers. This results in inadequate community preparedness for potential disasters, increasing the risk of losses.

7. Comparative Analysis and Recommendations for Further Improvement in Bulgaria, Romania, and Albania

The comparative analysis of disaster risk management systems in Bulgaria, Romania, and Albania is crucial in understanding the strengths and weaknesses of different national approaches to this essential area. Although all three countries belong to a region prone to similar natural hazards, such as earthquakes, floods, and wildfires, their disaster risk management approaches exhibit varying levels of development and capacity. These differences can be attributed to diverse economic and social conditions and varying levels of engagement in regional and European initiatives.

As a member of the European Union, Bulgaria has significantly modernised its disaster management system through EU funds and collaboration with neighbouring countries. Its integrated early warning and emergency coordination system is a key strength. However, challenges remain in implementing measures locally, where delays and inconsistencies often arise. Additionally, capacities in rural areas remain limited, restricting the effectiveness of disaster response in these regions.

Similarly, Romania, a country highly vulnerable to earthquakes, has invested heavily in strengthening infrastructure and early warning mechanisms. While the system is well-developed nationally with strong support from the EU, Romania faces challenges in funding and inter-agency coordination, as well as a need for deeper integration of local communities into disaster management processes. One of Romania's significant strengths lies in its technological capacity and training in earthquake risk response.

Albania, on the other hand, has recently begun to make significant investments in advancing its disaster management system, particularly under its 2023–2027 strategy. Despite facing numerous challenges, including insufficient financial support, weak infrastructure capacities, and a lack of modern early warning systems, Albania's risk management strategy places a strong emphasis on regional cooperation and strengthening local capacities. This approach, which highlights the importance of community involvement and international partnerships, represents a significant step toward improving disaster resilience.

Compared to Bulgaria, Romania, and Albania, Serbia shows promising potential in disaster risk management but grapples with challenges shaped by its unique socio-economic and institutional dynamics. Bulgaria has a strong legal framework and integrated strategies prioritising early warning systems and disaster risk reduction across sectors. Romania excels in defining institutional roles, maintaining a structured emergency management system, and effectively leveraging international resources. In contrast, Albania, despite limited institutional capacity, highlights the importance of community involvement and international partnerships to mitigate systemic weaknesses.

Serbia displays notable strengths, including highly skilled personnel, significant academic contributions, and a growing presence in regional and international cooperation efforts. However, challenges persist, such as inadequate coordination between national and local institutions, constrained financial and technical resources, and inconsistent implementation of disaster risk reduction policies. A critical gap lies in lacking comprehensive risk maps and geospatial databases, which limits effective planning and targeted interventions. Public awareness of disaster risks is also low, reducing the ability of communities to engage actively in preparedness and response efforts (Cvetković, 2024; Cvetković & Šišović, 2024a).

While Bulgaria has effectively utilized the European Union Civil Protection Mechanism to strengthen its capacities and Romania has implemented successful cross-border cooperation projects, Serbia's involvement in similar initiatives remains in development. There is significant room for Serbia to learn from these neighbouring countries, especially in creating a coordinated early warning system, optimizing resource allocation, and enhancing risk communication strategies.

Serbia and Romania share a reliance on volunteer organizations and community-based disaster responses. Both nations recognize the importance of local participation but struggle to systematically integrate these efforts into their national frameworks. On the other hand, Bulgaria offers a compelling model of institutional cohesion, with seamless coordination between national and local governments—an approach Serbia could adopt to address its own institutional fragmentation.

This comparative analysis highlights the need for Serbia to strengthen its disaster risk management system by adopting proven practices from its regional peers:

- Establishing precise geospatial risk mapping systems to improve planning and resource distribution.
- Expanding public education initiatives to promote a culture of prevention and resilience.
- Enhancing local government capacity through focused training and increased funding for disaster response.
- Developing robust inter-agency coordination mechanisms and integrating volunteer efforts into national strategies.

By aligning its disaster management practices with international standards, Serbia can foster stronger regional cooperation and build a more resilient framework. Addressing systemic weaknesses while capitalizing on existing strengths positions Serbia to create a comprehensive disaster risk management system capable of responding to the complex hazards it faces.

This analysis lays a foundation for policy reform and future research, underscoring the value of shared regional experiences in overcoming challenges and advancing disaster resilience across Southeastern Europe.

Further enhancement of disaster risk management systems in these four countries will require improved regional collaboration, increased investments in early warning technology, and greater integration of local communities into disaster planning and response processes (Table 1). Additionally, raising public awareness about the importance of preventive measures and better coordination among different institutions will strengthen regional resilience.

Table 1. Recommendations for Enhancing Disaster Risk Management Systems in Bulgaria, Romania, Albania, and Serbia

Country	Identified Problems	Recommendations for Improvement
Bulgaria	1. Insufficient coordination between institutions. 2. Underutilization of EU funds. 3. Low public awareness of disaster risks. 4. Gaps in risk communication strategies. 5. Limited integration of disaster risk reduction measures into spatial planning.	1. Strengthen inter-institutional collaboration through joint training and simulations. 2. Enhance capacities to absorb EU funds via administrative training and procedural simplification. 3. Launch public awareness campaigns to educate citizens on disaster risks and preparedness measures. 4. Develop clear, standardized communication protocols for early warnings and risk updates. 5. Integrate disaster risk reduction measures into spatial planning and urban development strategies.
Romania	1. Weak integration of local communities in disaster risk management. 2. Inadequate maintenance of critical infrastructure. 3. Limited capacity of emergency response teams in rural areas. 4. Insufficient use of technology for risk mapping and management. 5. Lack of comprehensive early warning systems for floods and earthquakes.	1. Develop programs to empower local authorities and communities in disaster preparedness and response. 2. Allocate increased budgets for the maintenance of critical infrastructure. 3. Expand training programs and resources for rural emergency response teams. 4. Invest in advanced technologies for risk mapping, such as GIS and satellite monitoring. 5. Establish robust early warning systems tailored to high-risk areas for floods and seismic activity.

Albania	1. Limited institutional capacities for disaster management. 2. Lack of advanced technologies for early warning systems. 3. Low public awareness and preparedness for disasters. 4. Insufficient coordination with neighbouring countries in cross-border disaster management. 5. Weak enforcement of building codes and regulations to withstand disasters.	1. Strengthen institutional capacities through international partnerships and technical assistance. 2. Invest in early warning systems and train personnel in their effective operation. 3. Conduct nationwide education campaigns to improve disaster preparedness among citizens. 4. Foster cross-border collaborations for joint training and emergency response exercises. 5. Enforce building codes and conduct regular inspections to ensure compliance, particularly in high-risk zones.
Serbia	1. Lack of comprehensive risk maps and geospatial databases. 2. Low public awareness about disaster risks and response measures. 3. Insufficient coordination between national and local institutions. 4. Outdated equipment and inadequate resources for emergency response teams. 5. Limited engagement of NGOs and the private sector in disaster risk reduction.	1. Implement geospatial information systems (GIS) to create detailed risk maps for better planning and resource allocation. 2. Organize national campaigns to educate citizens on disaster risks and safety measures. 3. Establish clear roles and responsibilities among national and local authorities to improve coordination. 4. Allocate funding to upgrade emergency response equipment and expand resource availability. 5. Strengthen partnerships with NGOs and the private sector to integrate innovative solutions and community-driven initiatives.

6. Conclusions

The analysis of disaster risk management systems in Bulgaria, Romania, and Albania reveals varying levels of development and effectiveness in each country. Each country faces specific challenges but also holds opportunities for improvement, taking into account their unique capacities and international commitments.

In Bulgaria, the disaster risk management system is largely integrated within national institutions, emphasizing alignment with European directives and standards. Bulgaria has successfully developed an early warning system for natural disasters such as floods, fires, and earthquakes, along with efficient emergency response mechanisms. Moreover, there are well-defined coordination mechanisms among various levels of government, with local communities actively involved in planning and preparation for emergencies. The strengths of this system include a relatively strong infrastructure, EU membership, and access to European funding for disaster prevention and capacity-building initiatives.

Romania follows a similar approach, but its disaster risk management system places a higher focus on earthquake-related risks due to the region's high seismic activity. The Romanian system also aligns with European standards and has established protocols for cross-border coordination with neighbouring countries. A significant emphasis is placed on preventive measures and public education, as well as continuous improvement of infrastructure, especially in urban areas most at risk. Like Bulgaria, Romania benefits from EU membership and participates in joint disaster mitigation projects, greatly enhancing its capacity to handle various types of disasters.

On the other hand, Albania has more limited capacities compared to Bulgaria and Romania, mainly due to lower economic development and insufficient institutional support. Although progress has been made in developing its disaster risk management system, including the formation of national plans for disaster prevention and response, Albania still faces significant challenges. Primarily, there is a need for stronger early warning infrastructure and improved coordination between national and local authorities. Additionally, Albania relies on regional cooperation and international support for disaster risk management, which is crucial for enhancing its capacities.

Overall, Bulgaria and Romania have more developed systems due to EU support and long-term capacity-building strategies. Albania, while facing greater challenges, is making efforts to strengthen its system but needs to continue investing in human resources, technological capacity, and regional collaboration. To enhance disaster risk management across all three countries, further strengthening of preventive measures, public education, and improved disaster response infrastructure is recommended. Regional collaboration, especially in the context of climate change and the increasing frequency of natural disasters, will be crucial for building resilience to these events.

Funding: This research was funded by the Scientific–Professional Society for Disaster Risk Management, Belgrade (https://upravljanje-rizicima.com/, accessed on 20 October 2024) and the International Institute for Disaster Research (https://idr.edu.rs/, accessed on 25 October 2024), Belgrade, Serbia.

Acknowledgements: The authors acknowledge the use of Grammarly Premium and ChatGPT 4.0 in the process of translating and improving the clarity and quality of the English language in this manuscript. The AI tools were used to assist in language enhancement but were not involved in the development of the scientific content. The authors take full responsibility for the originality, validity, and integrity of the manuscript.

Conflicts of Interest: The authors declare no conflicts of interest.

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