Opportunities for the Development of Disaster Risk Management Capacity in Bulgaria in the Context of Climate Change

Metodi Ivanov [1], Kliment Naydenov [1], Antonina Atanasova [1], Eugenia Sarafova [2], Dimitar Zhelev [3]

[1] *Department "Regional Development", Faculty of Geology and Geography, Sofia University "St. Kliment Ohridski" 15 Tsar Osvoboditel Blvd., Sofia, 1504, Bulgaria*
[2] *Department " Geospatial systems and technology", Faculty of Geology and Geography, Sofia University "St. Kliment Ohridski" 15 Tsar Osvoboditel Blvd., Sofia, 1504, Bulgaria*
[3] *Department „Landscape ecology and environmental protection", Faculty of Geology and Geography, Sofia University "St. Kliment Ohridski" 15 Tsar Osvoboditel Blvd., Sofia, 1504, Bulgaria*

***Abstract* - The role of responsible administrative structures is to create conditions and opportunities for responding to climate change by integrating scientific research into both the justification of climate change mitigation measures and the operational processes of organizations. Combating climate change involves stimulating investment in sustainable and climate-friendly projects, reducing the use of primary raw materials in production, and strengthening national legislation to promote environmental sustainability. This paper aims to explore the potential of a leadership approach and a framework for tracking and monitoring capacity-building learning processes to address the challenges organizations face in combating climate change and its impacts on the country. The expected outcomes include improving organizational transformation towards nature-based solutions and climate action implementation, as well as increasing economic benefits for both organizations and society by pursuing higher environmental goals.**

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Corresponding author: Metodi Ivanov,
Department "Regional Development", Faculty of Geology and Geography, Sofia University "St. Kliment Ohridski" 15 Tsar Osvoboditel Blvd., Sofia, 1504, Bulgaria
Email: ivanov.metodi@gea.uni-sofia.bg

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1. Introduction

Climate change is affecting all regions of the world, with extreme weather events becoming increasingly frequent. This necessitates increasing the resilience and responsiveness of administrative structures to implement measures supporting population adaptation to climate change. Modern society demands increased transfer, transformation, and application of scientific research into everyday life. Educational and research institutions play a significant role in this process, which involves incorporating good sustainable practices into knowledge transfer. Universities and research institutes shape public perceptions of risk management, climate change, environmental protection, and biodiversity. They also develop good practices and models to adapt management processes, improve administrative capacity, and enhance knowledge transfer.

Educating children about the causes, prevention, response, and nature of disasters is crucial. It helps them understand risks, develop coping skills, and foster community participation [1]. Modern society strives to analyze and assess the needs of present and future generations. Building sustainable organizational models requires perceiving organizations as open systems interacting with their environment. Integrating different hierarchical levels and units involves building new governance levels and adapting missions and visions to contemporary environmental objectives in the context of climate change.

Analysis of recent literature and observed practices reveals that efforts in risk management have focused on transforming the Unified Rescue System (URS). However, there is insufficient attention to the challenges faced by local organizations in combating climate change. The Unified Rescue System (URS) is responsible for protecting the population during dangers or disasters, including those caused by natural disasters resulting from climate change. The system involves various central and local government institutions, as well as private entities and voluntary organizations, all of which are equipped to respond to potential risks and disasters. Disaster protection is implemented at the national, district, and municipal levels.

Disaster risk reduction planning occurs at these same levels, including the development and updating of municipal disaster risk reduction plans. These plans outline operational objectives and the activities needed to achieve them [2]. While disaster response plans focus on specific elements or organizational structures within the URS, efforts to build a sustainable, transformed system for managing climate change-related risks remain insufficient. This issue arises, in part, from the complex hierarchical interactions between organizations in the country. Developing administrative capacity for Disaster Risk Management (DRM) in Bulgaria, in the context of climate change and its societal impacts, necessitates a holistic and systemic approach. This involves building and improving perceptions to enhance administrative capacity for risk management in the context of climate change and sustainable development policymaking. Educational institutions, particularly universities, play a crucial role in this process. They can contribute by understanding climate change as a complex issue with interrelated scientific, social, economic, and political dimensions. This understanding could lead to the development of a standalone discipline focused on climate change and the adoption of a transformative approach to climate change education [3], [4], [5]. The primary legislative framework for disaster risk management in Bulgaria is the Disaster Protection Act (DPA), adopted in 2006, which is amended annually and includes provisions related to the implementation of disaster risk assessments by the competent authorities. It regulates the process of developing disaster preparedness and response plans at the national and regional levels. In addition, measures for implementing prevention and risk reduction are foreseen, as well as the modalities of financial and technical support, and the definition of the roles and responsibilities of the relevant authorities at the national and regional levels.

There have also been frequent problems in recent years with the development of the State of Disaster Protection Reports and the Priority Actions for Funding Reports, as gaps continue to be identified in terms of not describing priority disaster risk reduction measures for which funding is needed in the next calendar year or information on the financial resources required is missing. In addition, there continues to be relatively low efficiency in the development of State of Disaster Protection Reports. For example, as of 2023, only 134 reports have been developed at the municipal level in total, which represents only half (50.57%) of the country's 265 municipalities. Moreover, only 95 municipal mayors have submitted the Disaster Risk Reduction Priority Actions Reports they have developed for funding (35.85% of the country's municipalities) to their respective District Disaster Risk Reduction Councils [6]. The Disaster Protection Act also provides for the development of a National Disaster Risk Reduction Strategy, accompanied by a national programme for its implementation. Additionally, the specific terms and conditions for adoption are outlined, and their content is defined.

The Ministry of the Interior is the leading actor in the disaster risk management system. Together with its other core activities, it is also responsible for ensuring fire safety and protection in the event of fires, disasters and emergencies. Within the Ministry of the Interior operates the Directorate-General for Fire Safety and Civil Protection (DG FIRE), which is the specialised structure responsible for implementing activities to ensure fire safety and protection in the event of fires, disasters, and emergencies. It is also responsible for information, control, planning, and implementation of preventive activities, as well as administrative and penal activities and services.

The functions and powers of the General Directorate of Fire Safety and Population Protection are regulated in the Law on the Ministry of the Interior, the Rules of Procedure of the Ministry of the Interior, the Law on the Protection of the Population, and other laws and regulations. It should also be noted that the Directorate General for Fire Safety and Civil Protection is an integral part of the Unified Rescue System (URS), whose primary role is to undertake activities that protect the population in the event of danger or disasters. The Unified Rescue System also includes ministries and institutions, regional and municipal administrations, first aid centres, other medical and health authorities, legal entities and entities with limited liability, voluntary formations, and armed forces formations [7].

Of course, the main components of the system are the General Directorate of Fire Safety and Population Protection at the Ministry of the Interior, the regional directorates of the Ministry of the Interior, the Bulgarian Red Cross and the emergency centres in case of disaster and crisis. In the event of disasters, all activities for the protection of the population shall be carried out through the Unified Rescue System (URS). The coordination of the different components of the Unified Rescue System (URS) being carried out through the operational centres of the General Directorate for Fire Safety and Population Protection. Institutional and regulatory arrangements for data sharing related to disaster risk management, planning, and policy implementation processes, as well as the development of agreements and codes between different institutions and organizations, are governed by the Disaster Protection Act. The National Disaster Risk Management Plan sets out the objectives, investment priorities and financial mechanisms for managing risks concerning: floods, earthquakes, landslides, forest fires, droughts, extreme heat, storms and extreme winter conditions; communicable diseases in humans; communicable diseases in animals and plants; industrial and nuclear accidents; and transport accidents.

The main objectives of the National Disaster Risk Management Plan are to provide information to responsible institutions, stakeholders, and the general public on the objectives, measures, tools, and resources for disaster risk management. On the other hand, this normative document aims to build consensus among different stakeholders and facilitate discussions related to the actions needed for disaster risk management in Bulgaria. Furthermore, the plan itself both forms part of and complements the framework of planning documents related to disaster protection in Bulgaria. The main components of the Unified Rescue System have clearly defined structures in place during a disaster, with the central executive authority for each type of disaster, as well as supporting authorities, designated at various levels of government.

All activities by participating institutions within the Unified Rescue System are conducted by the relevant disaster protection plans in force at the administrative level. It should be noted that in potentially occurring crisis events, three main stakeholders hold crucial importance in collecting and preserving data on damage and losses. First and foremost is the Ministry of the Interior, as it is responsible for both the early warning and notification system, the national emergency number 112, and it is also the lead in immediate disaster response (within 72 hours). Additionally, it is responsible for organizing the work of the Interministerial Commission for Recovery and Assistance (ICRA).

Next in the collection and storage of information related to disasters is the National Institute of Statistics, whose responsibility is related to collecting statistical information. Third are the municipalities, whose responsibilities include implementing all stages of disaster risk management, as well as recovery afterwards. A major problem facing organizations relates to insufficient staffing, especially given that there has been a steady increase in the volume of work. On the one hand, the lack of staff is the result of low pay and limited opportunities for promotion, which hinders the attraction and rejuvenation of staff. On the other hand, it is rather the result of the lack of opportunities to improve synergies and efficiency in the work and coordination between the different responsible institutions and to provide support for their risk management activities, both at the national and regional levels.

The concept of social vulnerability has become a crucial aspect of disaster studies, though it is not without its criticisms. Attempts to validate social vulnerability indices often rely on existing disaster data or modeled disaster impacts. These indices are designed to be generalizable across various hazards [8]. The data collection process was conducted methodically to obtain a comprehensive and objective perspective on opportunities for developing disaster management capacity in the context of climate change and its impact on the Bulgarian population. The literature review focused on articles and conference papers published within the last five years. The review aimed to identify potential capacity development opportunities for organizations involved in disaster risk management and climate change in Bulgaria. The selected papers were sourced from databases like ScienceDirect, Google Scholar, and others, using keywords such as “climate change”, “capacity development”, and “administrative capacity”. To ensure the inclusion of the most recent data, the review considered articles published after the adoption of the Disasters Act in Bulgaria in 2006, with particular attention paid to the review of the literature over the last five years. To ensure the timeliness and reliability of information, the authors primarily selected peer-reviewed articles published within the last five years, excluding those with poor methodological quality. A rigorous thematic analysis was conducted to synthesize information from various selected publications. Some identified article themes were merged, modified, or removed to align with the research questions of this study. While the theoretical review relies on secondary sources, this study aims to contribute to filling knowledge gaps related to developing the capacity to address climate change-related risks in Bulgaria.

It considers the long-term impact and organizational adaptation to current disaster risk conditions. Based on the literature review and empirical insights, this paper will outline key challenges and opportunities for enhancing administrative capacity in the context of climate change mitigation and adaptation, focusing on managing the risk of rapid-onset natural events and industrial accidents in Bulgaria. The study aims to identify key challenges and constraints for enhancing administrative capacity through a leadership approach in planning, developing, and implementing disaster risk management policies in the context of climate change in Bulgaria. Leadership is defined as the process of influencing organizational or group activities to achieve goals or both set and achieve goals. Responsible leadership encompasses the management of significant initiatives and projects, including those related to the environment, climate change, and sustainability [9]. Building structured systems in disaster risk management is crucial for implementing effective policies, programs, and actions. This can be achieved by improving coordination among established institutions and individuals involved in risk management processes [10].

A systemic view of disaster risk formation, management, and reduction considers that Disaster Risk Management (DRM) is significantly influenced by societal experiences, definitions, power relations, division of labour, class dynamics, and other factors. This relational approach is linked to the systemic nature of risk, where disaster risk is associated with cascading impacts that spread within and across systems and sectors (such as urban settings, ecosystems, health, food supply, and critical infrastructure) through the movement of capital, goods, information, and people across regions and countries [11], [12].

2. Increasing the Administrative Capacity of Organizations

Enhancing organizational administrative capacity involves improving, transforming, and upgrading ranking systems and quality assurance criteria. The Malcolm Baldrige National Quality Award (MBNQA) model incorporates both soft and hard aspects of Total Quality Management (TQM) and has proven valuable for numerous public and private organizations in implementing management and operational reforms. The MBNQA model comprises six dimensions: leadership, strategic planning, customer focus, process management, human resource management, and information and analysis. Consequently, it has been extensively studied by many researchers [13].

TQM principles include "citizen satisfaction and strategic planning" and "HR focus and leadership commitment" [14]. Studies demonstrate the concept of "linked extreme events," which describes the complex interplay of physical and societal factors that amplify impacts. Understanding these linkages is crucial for developing effective risk management strategies and adapting to change [15], [16]. The implementation of policies and practices to manage the risk of rapid-onset natural phenomena and industrial accidents is often lacking in less developed countries. One common reason is the existence of gaps in existing legislation, which may not fully address environmental protection, biodiversity, and organizational roles and regulations in this area. It is important to recognise that climatic conditions significantly impact human lives and shape diverse cultures and traditions across different regions [17]. It is essential to recognise that the mere existence of regulatory preconditions does not guarantee sustainable decision-making for enhancing administrative capacity, achieving sustainable development, and mitigating climate change. In recent years, growing environmental concerns and increased public awareness have prompted many countries to take measures to reduce negative environmental impacts. The European Union (EU) actively protects the environment through policies designed to preserve public health, well-being, and natural resources. In the fight against climate change, the EU plays a leading role in international climate negotiations by formulating and implementing relevant policies and strategies [18].

Existing policies and practices aimed at enhancing the administrative capacity of organizations within the Unified Rescue System, responsible for responding to disasters, emergencies, and catastrophes, including those caused by climate change, primarily focus on training, skills development, technological access, and networking. These policies and practices should also address common challenges identified in disaster management [19]. A top priority should be implementing training and development programs, as organizations focus on career management strategies to drive sustainable organizational performance [20]. A country's preparedness to respond to disasters, emergencies, and catastrophes is linked to the concept of "institutional resilience," which explains why some countries are better equipped to recover from such events. Institutional resilience can be defined as the ability of a social system, including society, community, and organizations, to respond to and adapt to sudden challenges, regardless of their origin [21]. Collaborative governance in the context of climate- and disaster-resilient development differs from "regular" collaborative governance due to factors such as the influence of disaster or climate risk contexts and the impact of previous disasters.

Bridging science and local knowledge, as well as social learning through collaborative platforms, is particularly relevant. Given the cross-sectoral, cross-scale, and cross-stakeholder nature of disaster and climate risk, a multitude of formal and informal approaches should be emphasized in climate and disaster-resilient development [22].

Capacity building can rely on the following four approaches:

Top-down approach: Implementing necessary changes to the policies or practices of organizations responsible for disaster response.

Bottom-up approach: Creating conditions for staff skills development.

Partnership approach: Enhancing and strengthening relationships between responsible organizations.

Community organizing approach: Creating conditions to attract and increase membership, form new community organizations, or restructure and join existing ones to enhance disaster response capacity, including responding to climate change-related events.

The introduction of a leadership model can enable administrative structures to overcome external challenges imposed by the legal framework. Developing a policy for the sustainable improvement of organizational administrative capacity involves the sequential implementation of the following steps:

1. External and internal constraint analysis: Identifying and assessing external and internal factors that may impact the policy.
2. Prioritization: Determining the most influential and relevant factors.
3. Scoping, objective formulation, and result programming: Defining the scope, setting objectives, and planning expected outcomes.
4. Measure development: Develop specific measures to ensure regulatory compliance and assign implementation responsibilities. These measures should aim to reduce costs, engage staff, and increase awareness and knowledge to enhance the organization's long-term administrative capacity.
5. Impact assessment: Assessing the potential consequences of the proposed policy or program before implementation to inform decision-making. Impact assessment is a valuable tool for making informed decisions about actions and their influence on environmental protection, economic development, and social well-being.

The benefits of implementing the leadership approach model include an organisation’s ability to maximise economic advantages while also managing risks to its administrative capacity.

Additionally, this model supports broader social goals, such as reducing social inequalities and protecting the environment for future generations.

This study aims to identify the external challenges organizations face due to outside factors, which necessitate the adoption of a leadership approach to leverage their internal incentives fully. By utilizing the leadership approach model, organizations can better integrate sustainability into their management practices related to environmental protection and climate change. It is important to note that implementing better sustainable practices may require changes to existing legal frameworks.

3. Materials and Methods

A leadership approach can support embedding resilience in governance processes, both within the Unified Rescue System and in climate change mitigation efforts. Leadership is considered a critical factor in building resilience both in theory and practice Examining the Unified Rescue System organizations and the influence of leadership on them can identify opportunities to improve administrative capacity, policy planning, and action related to climate change and its potential impacts. Inclusive leadership can catalyze sustainable development by fostering creativity, improving organizational effectiveness, and promoting pro-environmental behavior [23]. In addition to managing resources ethically, organizational leaders must focus on achieving long-term goals without compromising core values. Sustainable leadership involves promoting continuous learning, systems thinking, and stakeholder engagement. Sustainable leaders create organizations that are both environmentally responsible and economically viable [24]. Organizations must maintain high levels of commitment, emphasizing the role of leadership. A holistic approach to environmental protection and climate change mitigation requires managers to plan, implement, and monitor strategies and policies. Strong leadership supports sustainable sourcing processes and engages all relevant departments, staff, and stakeholders to ensure effective implementation.

The National Strategy for Disaster Risk Reduction 2018-2030 [25] aims to create a sustainable and safe environment. It identifies key areas for improvement, including:

- Improving data-sharing mechanisms,
- Implementing a systematic approach to disaster protection planning,
- Enhancing expert, financial, and technical capacity, and ensuring coordinated financing of disaster risk management measures between responsible institutions, while promoting the use of insurance instruments. A public-private partnership should provide an economically viable relationship that benefits all stakeholders [26].
- Improving monitoring and evaluation of disaster risk reduction activities,

- Increasing awareness and understanding of disaster risk among authorities and the public.

Climate change in Bulgaria is leading to increased:

- Droughts characterized by longer and more intense dry spells,
- Heat waves with extremely high temperatures, increasing the risk of forest fires,
- Heavy rainfall and flooding, which threaten local populations and infrastructure.

To deal with climate change in the country, it is necessary to engage with the problems of various interested parties, such as public sector organizations in the form of the executive authorities, which must provide financial assistance related to the prevention of the identified risks and the restoration of the affected regions in the result of negative phenomena that have occurred, as well as finance and promote the conduct of scientific research and the implementation of policies and the planning of specific measures to support adaptation to climate change not only in the field of agriculture to ensure the sustainability of Bulgarian agriculture [27], and in all spheres of the country's socio-economic life.

4. Challenges in Building Administrative Capacity to Combat Climate Change in the Context of Disaster Risks

The country has taken a proactive approach to disaster risk management (DRM). This strategy is supported by a legal and strategic framework that emphasises a comprehensive plan across all stages of the Disaster Risk Management (DRM) cycle: prevention, preparedness, response, and recovery. The foundation for enhancing administrative capacity in disaster risk management is outlined in the Disaster Protection Act (DPA). This act defines the essential elements, responsibilities, and arrangements for Disaster Risk Management (DRM), clarifying the roles of various administrative bodies and individuals involved in disaster preparedness, response, and recovery. This framework also addresses the increased risk posed by climate change, leading to:

- An increase in the frequency and intensity of disasters, necessitating updates to the legal framework and heightened funding to strengthen administrative capacity to face contemporary challenges.
- The emergence of new types of disasters in certain regions, requiring warnings and preparedness measures for local populations.
- A proactive approach to combat climate change, focusing on prevention and mitigation strategies. This includes transforming land use patterns in vulnerable areas and developing infrastructure to mitigate adverse events in regions that are significantly affected.
- An emphasis on raising public awareness through expanded campaigns that educate citizens about the risks associated with climate change.
- Improved collaboration and integrity among the various administrative and organizational structures involved in both DRM and climate change research.
- Furthermore, it is imperative to enhance early warning systems and identify and map potential threats to both the population and the national territory. A multidisciplinary approach and increased cooperation among responsible institutions and independent experts will be essential. This effort could lead to specific measures for constructing new infrastructure or enhancing existing facilities.

Furthermore, due to the growing threats posed by prolonged and intense dry periods, significant attention should be devoted to developing drought management plans. These plans should not only focus on protecting water resources but also incorporate strategies across agriculture and other sectors to ensure the availability of water for essential needs and the overall functioning of socio-economic life in every region of the country. The process of capacity development for disaster risk management encompasses a wide range of activities and employs various approaches. Capacity building can involve numerous initiatives, from organizing and conducting training to enhance skills to improving access to technology and strengthening existing communication networks and channels. Additionally, it aims to bolster managerial, organizational, and administrative capabilities, which may involve reforming responsible institutions or even establishing new ones if a need is identified. The approach to the overall holistic development of administrative and management capabilities within institutions engaged in disaster risk management fosters the establishment of an enabling environment for the systematic handling of complex processes over the long term. Figure 1 illustrates a change framework that highlights the levels of impact stemming from this holistic approach to enhancing administrative capacity. Recognizing that the holistic approach views the organization as a complex system composed of interconnected elements, the emphasis is on the integration and synergy of these components.

Figure 1. The framework demonstrates the impact levels associated with the holistic approach to enhancing administrative capacity

Key areas include the development of human resources, organizational structure, processes, technologies, and culture, all of which contribute to improved effectiveness and efficiency in organizational activities.

When addressing climate change and seeking ways to enhance organizational capacity, it is crucial to cultivate spatial thinking skills-such as visualization, mental rotation, spatial orientation, and spatial perception—among employees. This cultivation aims to build and refine existing competencies and problem-solving abilities. Additionally, attention should be given to talent development and the adoption of the Integrated Curriculum Model (ICM), which encompasses mentoring and differentiated instructions [28].

The necessity for capacity development in disaster risk management, emergencies, and catastrophes, as well as in addressing climate change and its associated threats to communities, underscores the importance of creating a comprehensive framework. This framework should reflect the need for change and serve as a guide for institutions in developing plans to enhance their capacity for disaster risk management. It should clearly outline the critical issues and actions required to achieve the desired outcomes and facilitate the transformative capacity development necessary for effective long-term impact. This framework is summarized in Table 1.

Table 1. Framework for change to build capacity and understanding of climate change issues in Bulgaria

Level of impact	Impact	Actions	Issues
Individual	Change in attitudes and behavior from expected climate change.	Transfer knowledge and develop skills to combat climate change. Strengthen and expand competencies.	Lack of motivation for development and commitment to organizational issues and challenges from climate change. Turnover and job dissatisfaction in responsible institutions.
Team	Increase communication and coordination between different administrative departments and units within organizations to combat the effects of climate change.	Improve information flow. Reduce conflicts. Improve cooperation. Increase technical and functional skills.	Lack of clear definition of roles and responsibilities. Lack of trust in team members. Flight from taking responsibility. Lack of resources to accomplish set goals.
Institutional	Overall performance of the organization and enhancement of its functional capabilities	Adapting the organization to change. Increasing accountability and transparency. Fostering partnerships and networking to increase collaboration.	Regulatory incompatibility and the inability of organizations to adapt to changes in the external environment
Public	Increase trust and confidence in the performance of responsible institutions in their fight against climate change.	Increase the efficiency, responsiveness, accountability, and productivity of responsible institutions.	Distrust and social instability. Lack of citizen engagement with climate change. Lack of clear definition of competence needs and misidentification of required competencies.

The framework presented in Table 1 focuses on achieving long-term impacts that strengthen institutional, organizational, and individual capacities for disaster risk management while fostering resilient attitudes toward climate change.

To achieve these objectives, the change framework outlines a pathway comprising key actions and issues that can be integrated into systematically designed capacity development plans across various administrative structures involved in risk management and climate change.

The accompanying Table 1 identifies the primary challenges in capacity building, and the authors believe it possesses a dynamic quality that allows for ongoing modification and interpretation in future studies. This classification can be aligned with the activities and services offered, while capacity-building efforts can address several identified areas and issues, including:

- Organizational resources,
- Skills and knowledge ownership,
- Hierarchical subordination,
- National, regional, and local policies, along with inter-institutional authority, play a critical role in addressing climate change. The development of an effective capacity development plan primarily relies on creating an enabling environment, as the implementation of planned initiatives can be shaped by a variety of systemic, behavioral, organizational, political, and contextual factors. Adopting an integrated approach to identify systemic, institutional, and policy-related opportunities and constraints is essential for comprehending the issues and challenges associated with capacity development in institutions focused on climate change and the potential risks that arise from it.

Three key outcomes can be pursued during the implementation of capacity development plans:

- Establishing the necessary organizational capacity to effectively fulfill the statutory activities and responsibilities of the relevant institutions.
- Enhancing institutions' ability to access resources needed to implement plans and strategies.
- Ensuring effectiveness in the adaptation of organizations regarding disaster risk management and climate change.

For monitoring and evaluation, the Capacity Development Results Framework, developed by the World Bank [29] is recommended to identify factors and processes and to oversee activities. Utilizing this framework, a set of outcomes should be defined, tracked, and monitored to reflect the learning process and the impact of various capacity-building activities.

The subsequent Figure 2 illustrates a framework designed to oversee and evaluate the capacity-building training process.

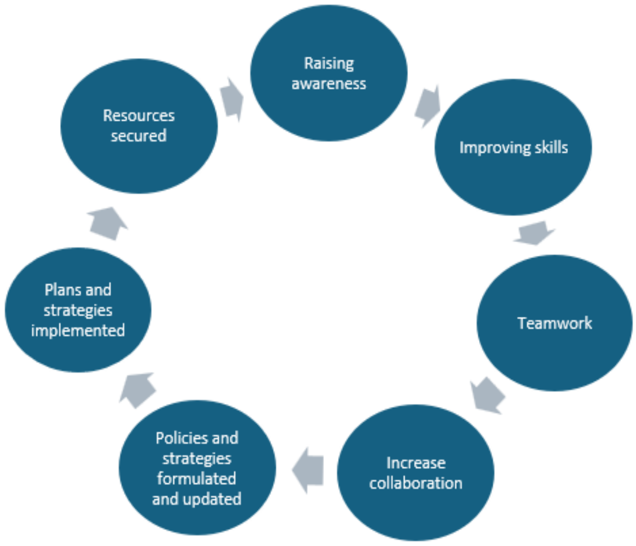

Figure 2. A framework for tracking and monitoring the capacity-building training process should include

Based on the literature review regarding leadership approaches, organizational structures tasked with addressing climate change in the country will need to adopt two primary strategies. The first is a top-down approach, which administrative leaders should spearhead through official statements and policy documents. This includes plans and strategies aimed at mainstreaming climate change issues into organizational agendas, thereby enhancing the capacity to address the potential threats and risks posed by both sudden and fast-onset natural disasters. The second is a bottom-up approach, which focuses on initiatives organized by those directly involved in risk management and climate change. This approach can facilitate the gradual institutionalization of larger transformative changes related to capacity building within organizations. The proposed framework depicted in Figure 2 advocates for the implementation of several essential steps to augment the risk management capabilities of responsible institutions:

- Improve institutional coordination among entities involved in risk management across the country by increasing cross-coordination to delineate roles and responsibilities. Additionally, enhance collaboration in the development of plans and strategies at all levels of government (national, regional, and local) within the Unified Rescue System to address potential climate change risks.

- Develop and issue comprehensive plans and strategies aimed at strengthening the capacity of organizations to mitigate disaster risk. This should include the provision of the necessary methodological guidance and expert support.
- Increase access to funding and further support research and the application of innovative technologies and solutions that bolster disaster risk management processes.
- Plan and establish mechanisms for knowledge transfer, along with the creation of a national education and awareness program targeting identified disaster risk areas. This initiative should elevate public awareness and commitment to building capacity for climate change adaptation.

5. Discussion

Capacity development for disaster risk management requires a balanced leadership approach to identify the challenges and opportunities associated with enhancing organizational capacities, particularly within the constraints of existing regulations and financial limitations. This study expands understanding of capacity development by proposing a framework for tracking the learning processes of organizations in the country related to disaster risk management and climate change. This area has not received the attention it deserves, especially in smaller localities and organizations across various regions. The results of this study are significant for political actors, underscoring the need for a review and revision of regulations related to risk management and the integration of climate change initiatives into the national agenda. Additionally, the findings underscore the importance of increasing internal awareness among organizational leaders about the necessity of enhancing their capacities in disaster risk management. However, some limitations of this study should be acknowledged. While it highlights important issues and offers a framework for developing risk management capacities in the context of climate change, it does not provide a detailed analysis of how these factors specifically affect each entity within the country's Unified Rescue System.

Nevertheless, it could positively influence policy formulation, implementation, and the adoption of measures aimed at enhancing the capacities of individual administrative entities within the unified rescue framework. It is also important to note that each structure within the Unified Rescue System has different internal perceptions and responses from its staff, which can significantly affect policy development and the execution of capacity-building measures.

Relying solely on an individual approach by each organization’s leadership to address capacity development issues may overlook other critical factors that influence the establishment of sustainable capacity development practices. Although this study does not focus specifically on a particular organizational structure within the Unified Rescue System, the findings related to capacity development are relevant to the entire public sector in Bulgaria. This means that the insights gained can be valuable not just for Bulgarian public sector organizations, but also for others in countries that are increasingly addressing climate change and its impacts. Future research could explore specific internal factors within individual organizations that may either support or hinder capacity development in a specific administrative structure associated with the Unified Rescue System. While this type of analysis would be more localized and primarily relevant to the organization itself, it could also highlight issues that are common among various public organizations. Additionally, research could focus on developing curricula aimed at enhancing community engagement regarding climate change, especially in the context of training public employees. Investigating how different leadership styles and approaches can help overcome existing legal, institutional, cultural, behavioral, and physical barriers to building crisis management capacity and increasing public engagement with climate change could also be beneficial. Furthermore, future studies could involve comparative analyses across multiple institutions in different regions. Such studies could expand understanding of how to enhance the effectiveness of various approaches to developing organizational capacity and identify the prerequisites for creating institutional resilience in disaster risk management. Lastly, research could evaluate the feasibility, development, and implementation of artificial intelligence (AI) in enhancing disaster risk management capacity. This would require the integration of different stakeholders, including policymakers, researchers, and experts from various fields, to ensure that the incorporation of AI effectively contributes to reducing potential risks to the population from natural disasters.

It should be noted that from the activities of the Council for Disaster Risk Reduction under the Council of Ministers of the Republic of Bulgaria, regular meetings are held to adopt the draft annual plans for the implementation of the National Program for Disaster Risk Reduction 2021-2025 [30], activity reporting reports, work programs for the respective years.

In addition, the Council for Disaster Risk Reduction of the Council of Ministers has issued "Guidelines for the preparation of District and Municipal Reports on the status of disaster protection and District and Municipal Reports on priority disaster risk reduction activities requiring funding" and "Guidelines for planning, conducting and evaluating drills and exercises, and these guidelines have been sent to all district governors and mayors of municipalities. Some difficulties in the activities of the Disaster Risk Reduction Council related to the effective implementation of all the activities set out in the Annual Work Programme have also been identified, as an opportunity to increase the effectiveness of the activities of the Disaster Risk Reduction Council, a more active involvement of the members is needed regarding the implementation of activities and in decision making.

For example, in 2022, there were 49 disasters for which a state of calamity has been declared under the Disaster Protection Act, where the leading share of disasters occurring in the territory of the country is occupied by floods, or they are 49% of all events for which states of calamity have been declared in 2022. In this regard, it should be summarized that floods continue to be the most frequently occurring disasters on the territory of the country and at the same time, for example, the disasters occurring in 2022 correspond to the identified significant risks in the National Disaster Risk Profile in the Republic of Bulgaria, which was adopted by Decision No. 6 of the Council of Ministers of 04.01.2023. A positive result that can be noted is that in 2022, no people died or went missing as a result of the disaster situations that occurred in the country. The identified problems are related to discrepancies in the data on damages and losses from disasters in the country, which are provided by municipal and district administrations. This results in significant difficulties in aggregating and validating the information.

Examples that can be given relate to discrepancies in the information available in the district disaster status and protection reports, where different information on the number of disaster situations, damages caused, and losses incurred is observed, which is at variance with the data provided on the progress made in meeting the Sendai Framework targets. The process of collecting and aggregating disaster damage and loss data received from ministries, departments, municipal, and district administrations is identified as a serious challenge. One of the reasons that can be highlighted is the lack of a regulated procedure for collecting, storing, and sharing disaster damage and loss data.

In this regard, the strengthening of administrative capacity should also be linked to the regulation of the process of establishing and maintaining a database on disaster losses and damages, in order to carry out the necessary comparative analysis of the progress made in implementing the National Disaster Risk Reduction Policy. This will enable the identification of risks and the improvement of disaster protection in the country. The National Disaster Risk Profile in the Republic of Bulgaria (NDRRP) was adopted by Decision No. 6 of 04.01.2023 of the Council of Ministers as part of the National Disaster Protection Plan [31], the objectives of which are:

- To inform policymakers, stakeholders and the general public by providing evidence-based analysis of key selected natural and anthropogenic risks.
- Assess risks, their likelihood of occurrence and potential impacts on the social, economic and natural environment under selected scenarios with differing probabilities of occurrence in a consistent manner that allows for comparison.
- Identify gaps in the current understanding of disaster risk in the country, as well as opportunities for improvement, and serve as a basis for the development of a disaster risk management plan and future risk assessments.
- Build consensus among different stakeholders to underpin the discussion on the significant disaster risks facing Bulgaria.

The developed National Disaster Risk Profile for Bulgaria (NDRRP) is a guarantee that it is an informative document accessible to both decision-makers and the public. It also provides the necessary basis for planning disaster risk reduction activities. It has a systematic structure that allows consistent, reliable and comparable results for all types of risks and is based on the best available information on hazards and risks from a variety of sources (including historical data, forecasts, modelling, spatial atlases, databases and expert assessment). For example, based on a review of the annual plans for 2021 and 2022, 126 of the 164 planned activities have been successfully implemented. However, it should be noted that the number of institutions planning activities within the annual plans for the implementation of the National Disaster Risk Reduction Programme 2021-2025 is low, indicating that the commitment of many ministries, departments and institutions relevant to disaster risk reduction is insufficient, one of the possible reasons being the lack of sufficient administrative capacity.

Another serious challenge for the institutions is the formulation of activities in the annual plans, accompanied by the relevant mandatory attributes such as the existence of a realistic budget and timelines, clearly defined expected results and well-defined indicators showing performance and responsible institutions. A significant problem is the lack of measurable indicators and information on the funds spent on the implementation of the respective activity, which makes it difficult to adequately report on the results achieved and further hinders the identification of the actual investments made in disaster risk reduction as a whole.

Furthermore, the problem of low administrative capacity is confirmed in 2023, where only 11 district programmes (out of 28 district programmes) for disaster risk reduction under the Disaster Protection Act have been adopted by mid-year (July), of which 10 are accompanied by programmes and annual implementation plans. It is the low number of prepared and adopted district programmes for disaster risk reduction and annual plans for their implementation, respectively, that suggests that there is a lack of coordination and planning of prevention measures and activities, and, on the other hand, indicates that there is also low stakeholder activism and prevention effectiveness. Going down to the lower administrative level, it is seen that in the case of municipalities and from the activities of the respective municipal disaster risk reduction councils, only 109 municipal disaster risk reduction programs have been adopted, which is equivalent to 41.13% of the total number of municipalities in the country. Furthermore, the district plans received also indicate one of the main reasons for the lack of some of the planning documents concerning disaster risk reduction at district and municipal level, namely insufficient capacity in the respective administrations. In addition, the need for well-trained staff who are aware of the specifics of the subject matter and who have the necessary expertise and knowledge on the topics related to the phases of the disaster risk management (DRM) cycle is also mentioned. It should be noted that, in some places, the role of district and municipal disaster risk reduction councils in the preparation of relevant documents has been neglected at the expense of individual efforts by security and/or defence and mobilisation preparedness officers in the respective administrations. Another significant challenge relates to the formation of indicators for the implementation of annual activities from annual plans and programmes in disaster protection planning at the national, district and municipal levels. The lack of specific, measurable, realistic indicators that have clearly defined deadlines and institutions responsible for their implementation makes it difficult to assess and monitor the implementation of planned measures and activities.

Therefore, the necessary actions should be taken to increase the capacity of the District Disaster Risk Reduction Councils to prepare the documents related to disaster protection planning. In addition, training and workshops should be conducted to explain the objectives of each of the documents, the links between them and the mechanisms for monitoring their implementation [32].

6. Conclusion

In conclusion, the organizations involved in Bulgaria's Unified Rescue System encounter numerous challenges in advancing their disaster risk management capabilities. These challenges stem from legal constraints, highlighting the need to improve the regulatory framework. By adopting an internal leadership approach to develop internal regulations, organizations could effectively address these challenges and stimulate public discussions aimed at legislative change, potentially at the national level, if deemed necessary. This leadership approach not only increases the demand for diverse capacity-building plans and strategies but also emphasizes the importance of targeted, needs-based organizational development support. Such efforts are essential for effectively utilizing and enhancing existing capacities while strengthening the organizational risk management structure.

Furthermore, this study identifies the main approaches on which capacity building can be based, as common problems related to the development of Disaster Protection Status Reports and Priority Action Reports for funding have been identified where gaps continue to be observed about the description of priority measures for disaster risk reduction, as well as a lack of information on the necessary financial resources. In this regard, the study proposes a framework for monitoring and evaluating the capacity-building training process, which may be suitable for enhancing and developing disaster risk management capacity in Bulgaria in the context of climate change. This study emphasises the importance of adopting a strategic approach to developing resilience in establishing and enhancing administrative capacity for risk management in the context of climate change. In addition, this study highlights the need to explore and implement regular training and seminars to explain the objectives of each document related to disaster, accident, and catastrophe risk management, as well as the links between them and the mechanisms for monitoring their implementation in the context of climate change and environmental change.

The article also identifies a series of challenges facing the institutions responsible for disaster risk management, such as the need not only to formulate activities in annual plans, but also to accompany them with a realistic budget, specific deadlines, expected results, indicators reflecting implementation and the institutions directly responsible. Future research could focus on defining and updating the indicator framework for disaster risk management, taking into account climate change and its potential impacts on the country and its regions. Such a study is necessary to include additional measurable indicators and information on the funds spent on implementing relevant activities, to improve the effectiveness and efficiency of the measures applied, the activities carried out, and the actual investments made in disaster risk reduction as a whole. Future studies could also focus on conducting a comprehensive analysis to identify existing gaps in the current disaster risk management mechanisms in areas related to data integration between institutions, creating conditions for improving communication with stakeholders and raising public awareness taking into account interregional differences and the local context in developing the necessary administrative capacity to address the challenges facing the existing disaster risk management system, particularly in the context of climate change. Such a study will enhance the understanding of how climate change impacts disaster risk and, simultaneously, provide practical recommendations at both national and regional levels that will support government and institutional responses to emerging climate threats.

On the other hand, it will highlight the urgent need to strengthen disaster preparedness measures and build resilience in local communities to climate change, and take concrete measures to mitigate its impact. On the other hand, future research should also focus on studies to measure the effectiveness of the reforms and changes implemented, both about vulnerable population groups and on expanding the potential for integrating modern global best practices into disaster risk management systems in the context of climate change. In this regard, the role of innovative technologies in improving early warning systems and response capabilities, which have shown some weaknesses in Bulgaria in recent years when disasters have struck, should be defined. Undoubtedly, technological integration has enormous potential to enhance the effectiveness of institutions involved in disaster risk management, where cooperation among local authorities, academic institutions, and civil society needs to be further strengthened. Interdisciplinary research in future studies should focus on developing frameworks for the coordinated assessment of environmental, economic and social factors in the context of disaster risk management caused by climate change.

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