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# Interreg - IPA CBC



Greece - Republic of North Macedonia

## Preven-T

**PREVEN-T DELIVERABLE 5.2.2\_Emergency Management Frameworks E.M.F.s**

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### Abbreviations and acronyms

Deliverable	D
Expected Outcomes	EO
International Hellenic University	IHU
Non-governmental organization	NGO
Military Academy General Mihailo Apostolski	MAGMA

## **Executive Summary**

PREVEN-T is an 18 month duration project funding from the Interreg IPA Cross-border Cooperation Programme: PREVEN-T – CN2 – SO2.4 – SC049.

The overarching objective of the PREVEN-T project is to improve the operational efficiency and the administrative capacity of relevant services in natural disasters management. At the same time project's goal is to enable education, awareness, and sensitization of the local population, so that in cooperation with the competent authorities to have a coordinated action to deal with Natural and Technological Disasters and Risks. In particular, the project focuses on using innovative ICT tools and models aims at developing actions at four levels of natural disasters management: 1. Planning level: Development of rapid-response forecasting models (Information System for monitoring of fire detection and early warning, surface water and fragile vegetation pollution model, high-resolution weather model, hydrological model) 2. Prevention level: Organizing Educational and Training Seminars (e-learning platform) for students, Citizens and Civil Protection Authorities staff.

The main purpose of this document is to a report the progress of the PREVEN-T project during the deliverable D 5.2.2.

Emergency Management in North Macedonia mirrors the five fundamental components of emergency management: prevention, mitigation, preparedness, response and recovery. It is shaped by diverse measures that impact its effectiveness. Certain measures are integrated into the essential emergency management programs mandated by legislation, while others, although legislatively influenced, do not fall within the core emergency management programs. Additional measures are deemed integral to emergency management or provide support due to their alignment with best practices. These measures are also embedded in agreements, guidelines, and plans devised to handle emergencies.

Under legislative provisions, the Emergency Management in North Macedonia (EMNM) is granted authority to aid, supervise, and, to the best of its ability, coordinate the formulation of emergency management plans by relevant entities. The effectiveness of emergency management in North Macedonia is exemplified through the establishment, execution, and continual upkeep of compulsory emergency management programs. Furthermore, other programs and measures that exert influence on and provide support to emergency management in the country contribute to its robustness. The responsibility for sustaining these programs and measures is shared among ministries, the wider public sector, municipalities, communities, state government departments, as well as private enterprises, volunteer organizations, and non-governmental entities. Consequently, the plans and measures that ensure effective emergency management in North Macedonia are dispersed across numerous legislations, agreements, and an array of related documents.

The document called the Emergency Management Framework consolidates all the emergency management arrangements into a user-friendly reference document. This Framework presents a summary of these measures and includes links and references for further information. The intention is for the Emergency Management Framework to serve as a comprehensive overview of how emergencies

are handled in the country, providing decision-makers and casual readers with a concise resource for a quick review. Simultaneously, it offers guidance and directs readers to detailed documentation and plans for in-depth research and understanding when needed.

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## **1. Introduction**

An emergency refers to a situation or an imminent situation that poses a significant threat, capable of causing severe harm to individuals or substantial damage to property. These emergencies can arise from

natural forces, diseases or health risks, accidents, or intentional or unintentional acts. Emergency management encompasses organized endeavors aimed at preventing, mitigating, preparing for, responding to, and recovering from actual or potential emergencies.

Emergency Management in North Macedonia is fully committed to collaborating with partners by providing support, monitoring, and coordinating efforts whenever possible. The goal is to establish transparent, accountable, responsible and effective and efficient emergency management program that safeguards lives, property, infrastructure, and the environment, while ensuring the continuity of operations and services. As part of this program, EMO (Emergency Management Organization) strives to devise and implement evolving and advanced strategies, guided by international best practices and recommendations.

### **1.1. Research aim**

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The main objective of the Emergency Management Framework is to offer a clear and concise overview of how Emergency Management in North Macedonia approaches the field of emergency management. The framework presents the fundamental concepts and principles that guide the country's emergency management activities and initiatives.

When effectively implemented, emergency management programs play a vital role in saving lives, protecting property, public health, and the environment. They also contribute to maintaining economic stability and ensuring the continuity of critical infrastructure and services. These programs achieve these goals by adopting preventive measures to avoid certain emergencies, reducing the frequency and potential impact of others, preparing for and responding to incidents, and facilitating a speedy recovery process. Furthermore, the aim is to recover to an improved standard following an event. By implementing modern and up-to-date emergency management programs, communities across North Macedonia can be built to be safe, secure, and resilient.

The development of Emergency Management Frameworks, as part of this effort, serves to provide guidance to local government authorities and strengthen their capabilities in terms of preventing and mitigating natural threats and hazards within the Republic of North Macedonia.



## **1.2. Methodological framework**

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The project envisions the development of Emergency Management Frameworks to offer relevant and up-to-date guidance to local government authorities regarding the potential threats posed by floods, forest fires, and technological accidents. These frameworks aim to assist in implementing prevention and mitigation measures effectively. To create this crucial document, MAGMA's team conducted initial research focusing on climate changes, potential threats specific to the targeted areas covered by the EMFs, and the existing and projected capabilities for addressing these threats.

The research revealed that the current institutions have already established a certain level of communication and coordination, which should be incorporated into the document. Further guidance will be provided to improve the links, hierarchy of communication, consultation, and coordination among relevant stakeholders. Additionally, the national legal frameworks governing this field have been taken into consideration by MAGMA's team. This inclusion aims to eliminate misunderstandings and delays, ensuring a well-coordinated, efficient, and swift response during emergencies outlined in the document.

The document is intended to provide a clear conceptualization of the phenomena of interest for the EMFs. It will establish standardized terminology and, importantly, promote a consistent approach to enhancing prevention and mitigation efforts in relation to these phenomena.

## **1.3. The Role of Emergency Management in North Macedonia**

The legislative framework that generates responsibilities for emergency management in North Macedonia straddles the boundaries of the Constitution and several laws that specify particular roles of different institutions. The definition of the state of emergency in North Macedonia in the legal framework is not uniquely identified. The constitution has a formulation that refers to a term („вонредна“-Macedonian) which in pure translation could also be translated as extraordinary condition. Nevertheless, as the result of the security and defence sector reform and the ambition of Euro Atlantic integration the law of Crisis management from 2005 introduces the term crisis (emergency). This law and a subsequent legal update in this line more narrowly regulate emergency situations.

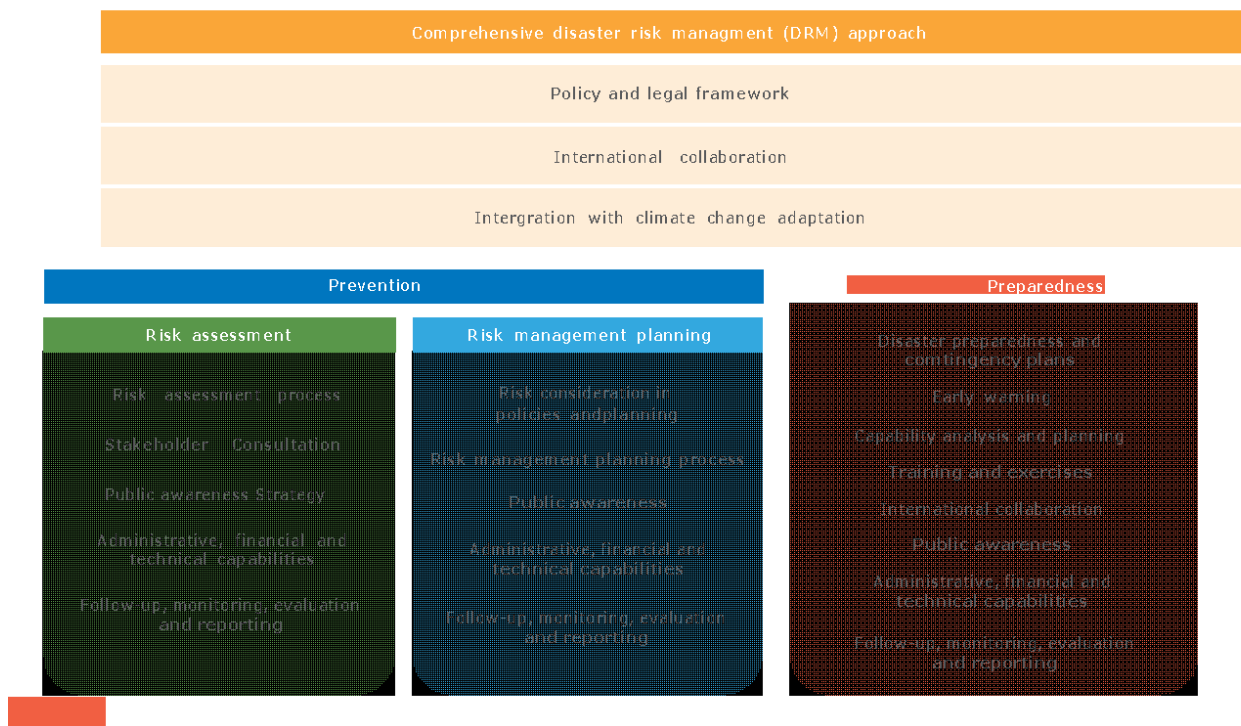
A state of emergency (Macedonian: вонредна состојба) as defined in the constitution exists when a major natural disaster or an epidemic occurs. Parliament decides whether or not a state of emergency have risen. Parliament passes the decision and proclaim state of emergency if this is proposed by the President of the Republic, the Government or by at least 30 MPs. If the Parliament can't meet, the decision to establish the existence of a state of emergency is made by the President of the Republic, who submits this decision to the Parliament for confirmation when the conditions for the meeting are met.

During a state of emergency, the Government gains legislative power. This means that the government pass the issues decrees with the force of law as the most effective and efficient mechanism to make decisions in this situation. The authorization of the Government to issue decrees with the force of law

lasts until the termination of the state of emergency. The decision of ending the state of emergency is passed by the Parliament. The legal framework out of the constitution for this term (which in its pure translation could be defined as extraordinary situation) does not exist. Put differently, no secondary legislation determining the roles and responsibilities of various institutions exist during the state of emergency.

The emergency management system and the accompanying institutional set up are generated by the Law on crisis management (further emergency management) and several other complementary laws or updates of the existing laws and bylaws. The Law on Crisis (Emergency) Management stipulates that it shall be organized and conducted to provide prevention and early warning in managing emergency that represent a risk to the goods, health and the lives of the people and animals and that are the result of natural disasters and epidemics or other risks and dangers and that directly jeopardize the constitutional order and the security of the Republic of North Macedonia or a part of it, where the conditions for declaring a state of war or state of extraordinary situation shall not exist. Although this provision could be read as that emergency management under this law represents a lesser threat to the country which supposed to differ from the emergency (extraordinary) situation as defined in the constitution there is limited operational and legal debate and almost no practice that will distinguish between them. During the COVID – 19 pandemic there were some attempts to distinguish between the two terms, however, these decisions were rather politically motivated than professionally or academically. The 2005 Law on Emergency (Crisis) Management introduced the establishment of:

- Steering Committee - a governmental body for coordination and management of the crisis management system (full composition in Annex 2)
- Assessment Group - a governmental body performing constant assessment of the risks and dangers to the security of the Republic and proposing measures and activities for their prevention, early warning and handling a crisis situation.
- Crisis Management Center (CMC) - an independent state administrative body providing continuity in the inter-departmental and international cooperation, consultations and coordination of the crisis management; preparation and assessment of unified assessment of the risks and dangers; proposing measures, and providing overall support to the Steering Committee and the Assessment Group. Regional crisis management centers were also established.



### Overview of the processes involved in emergency management.

Emergency Management Center in North Macedonia (EMCNM)<sup>1</sup> is the designated entity entrusted with the task of overseeing, coordinating, and supporting the formulation and execution of emergency management programs throughout North Macedonia. Implementing emergency management tasks, EMCNM performs the activities that refer to providing continuity of the inter-departmental and international cooperation, consultations and coordination. In accordance with its legal competences in a national emergency situation EMCNM on behalf of the Government performs the coordination and cooperation with international community as a national point of contact 24/7. It bears the responsibility of ensuring effective coordination between these programs and the state government. This pivotal coordination role encompasses various duties, including but not limited to:

- Ensure continuous operation of the Emergency Operations Centre (EOC) 24 hours a day, seven days a week.
- Facilitate the coordination of emergency response and recovery efforts, as and when needed.
- Offer guidance and assistance to communities and ministries across all aspects of emergency management. This involves:
  - Developing, providing, and/or coordinating training initiatives.
  - Collaborating, to the extent possible, with both public and private partners.

<sup>1</sup> In some documents referred as Crisis management center

- Establishing and coordinating a public education program.
- Administer and manage the emergency alerting system in North Macedonia.
- Maintain multiple emergency response and continuity of operations plans at the regional level.

Another important element of the emergency management system in the country is the national disaster management system that is integrated within the overall emergency management.

At national level, protection and rescue in North Macedonia is organised as a single system for tracking the progression, preventing the onset, and mitigating the consequences of natural disasters or other emergencies that endanger the country's population, critical infrastructure, flora and fauna, and items or facilities that are of special cultural and/or historic importance. According to the Protection and Rescue Law (TPRL), the protection and rescue system is realised through:

- monitoring, tracking, observation and analysis of possible risks of natural disasters or other disasters;
- prevention and mitigation of possible dangers;
- reporting and warning on possible dangers and issuing of directions for protection, rescue and aid;
- education and training for protection, rescue and aid;
- organisation of protection and rescue forces and establishment and maintenance of other forms of preparedness for protection, rescue and aid;
- self-protection, self-aid and mutual assistance;
- mobilisation and activation of protection and rescue forces and assets;
- determination and realisation of protection measures;
- rescue and aid;
- elimination of consequences from natural disasters or other emergencies up to the point of enabling basic living conditions;
- oversight of the realisation of protection and rescue;
- provision of assistance to areas significantly damaged by natural disasters or other emergencies;
- provision of assistance to other countries significantly damaged by natural disasters or other emergencies which have appealed for help;
- receipt of assistance from other countries.

At ministerial level, protection and rescue from natural disasters and other disasters is managed by the state authorities in accordance with laws and other regulations that define their responsibilities. The state authority institutions are responsible for the realisation of measures for prevention and mitigation of consequences caused by natural disasters and other disasters (i.e. man made) that fall within their area

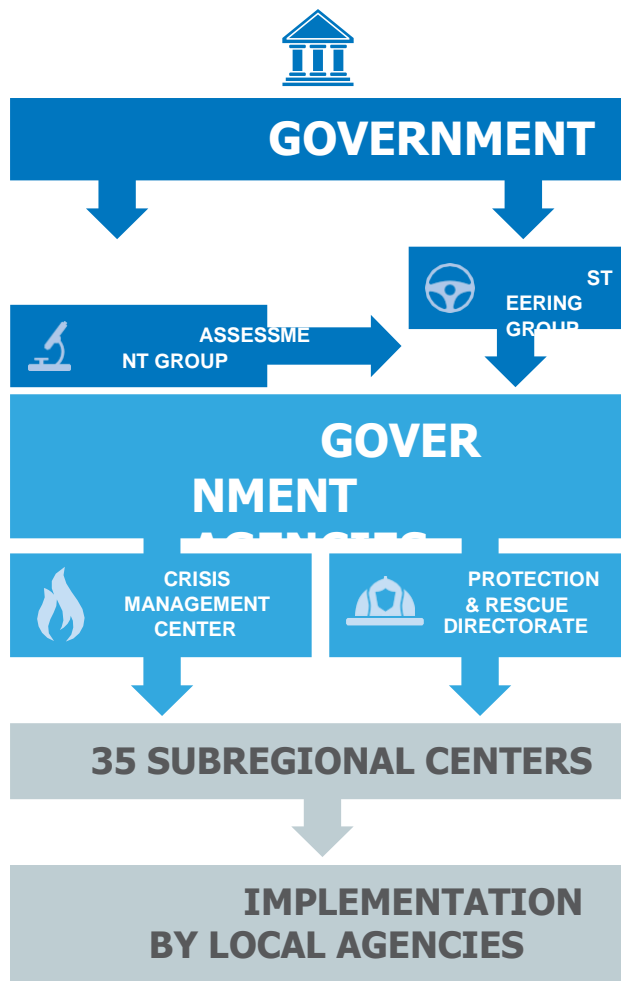
of responsibility. The measures for prevention and mitigation that are to be taken by the state authorities are developed in more detail within the National Plan for Protection and Rescue. At ministerial level, the central state administration authorities – within the framework of their scope of activity and competency that is stipulated by law – ensure the efficient functioning of protection and rescue systems, and especially:

- for their own needs, plan and secure resources and equipment for protection and rescue needs;
- draft and forward a threat assessment to the PRD in the segment applying to the region of their competency;
- are obliged to secure an appropriate competence level of workers and must undertake measures and activities necessary for efficiently carrying out the services of a central state government authority in disaster and major accident situations; and also
- carry out other duties stipulated by law.

The heads of central state administration authorities are responsible for implementing the provisions, which apply to the obligations of state government authorities, and especially for:

- timely preparation and giving information to the PRD about the importance of protection and rescue;
- timely and expertly carrying out duties which are within their competency and are directly related to protection and rescue;
- determining legal persons in the region of competency of the Central State Administration Authority participating in protection and rescue;
- timely and expertly conducting other protection and rescue duties determined by the law and other legislation.

As part of its national preparedness strategy, North Macedonia also maintains a national Early Warning System (EWS). The manner of engaging the EWS in the state is regulated in more detail by law. All the reports related to protection and rescue in the EWS in the state, in its regular work, are forwarded to the PRD. The elements of the EWS form part of national protection and rescue capacities, while local authorities mainly have executive obligations for implementing measures of preparedness for operational forces, notifying the population and implementing necessary measures in order to reduce the risk and consequences of an imminent emergency. Communication with the public is carried out by the spokesperson of the PRD, the Protection and Rescue HQ and the media representative at national level, as well as of the local self-government protection and rescue HQ for accidents of local importance, and also by authorised representatives of operational forces and media, in accordance with their professional responsibilities.



### Overview of the EMF in North Macedonia

The PRD and the E(C)MC form the backbone of North Macedonia’s EMF. They are responsible for coordinating the activities of North Macedonia’s various entities at the national level by (among others) communicating with the country’s eight main regional centres (located in Skopje, Tetovo, Ohrid, Bitola, Veles, Kumanovo, Stip and Strumica). This mandate is clearly outlined in North Macedonia’s Law on Protection and Rescue, which outlines how responsibilities are divided between the participants in protection and rescue activities, including the State, local authorities, private companies, and public enterprises, institutions and services. These organizations’ roles are outlined in brief below.

Organisation	Relevant legislation
PRD	<ul style="list-style-type: none"> <li>☒ Developing plans for protection and rescue;</li> <li>☒ Training protection and rescue forces based on predefined curricula and programmes;</li> <li>☒ Developing risk assessments in cooperation with the responsible state authorities; and</li> <li>☒ Organising and preparing the protection and rescue system.</li> </ul>
CMC	<ul style="list-style-type: none"> <li>☒ Performing activities that relate to providing continuity of the inter-departmental and international cooperation, consultations and coordination of crisis management;</li> <li>☒ Preparing and updating a unified assessment of the risks and dangers to the security of the nation;</li> <li>☒ Proposing measures and activities for resolving a crisis situation; and</li> <li>☒ Executing any other activities laid down by law.</li> </ul>

The PRD is part of the Assessment Group, and the CMC is part of the government's Steering and Assessment Groups. These represent the central state authorities and are comprised of members of relevant national entities.

Group	Membership	Function
Steering	<ul style="list-style-type: none"> <li>☒ Ministers of Internal Affairs, Health, Transport and Communication, Defence, Foreign affairs, Director of the CMC;</li> <li>☒ Representative from Security and Defence Commission of the Parliament</li> <li>☒ Representative from the Cabinet of the President</li> <li>☒ Other officials and experts may be invited (if necessary).</li> <li>☒ The President of the Government shall appoint a person from the Steering Committee that will lead the Steering Committee in conjunction with the crisis situation.</li> </ul>	<p>Coordinates and manages the country's crisis management system. The CMC and PRD do not coordinate in a crisis. The Steering Group coordinates and manages the crisis. The CMC gives administration support to the Steering Group and the Assessment Group. The PRD coordinates and manages on an operational, tactical and strategic level in all other emergencies.</p>
Assessment	<ul style="list-style-type: none"> <li>☒ Directors of the Public Security Bureau and Security and Counter Intelligence Department in the Ministry of Internal Affairs (MoI);</li> <li>☒ Directors of the Intelligence Agency; Director and Deputy Director of the CMC;</li> <li>☒ Director and Deputy Director of the PRD;</li> <li>☒ Head of Security and Intelligence Department in MoD;</li> <li>☒ Other officials and experts may be invited (if necessary).</li> </ul>	<p>Governmental body that performs constant assessment of the risks and dangers to the security of the Republic and proposes measures and activities for their prevention and early warning. The Assessment Group does not handle a crisis. It assesses the situation and advises the Steering Group if it is necessary to declare a crisis or not. The Steering Group, based on the advice of the Assessment Group, proposes to the government to declare crisis or not.</p>

## Overview of the Steering and Assessment Groups

North Macedonia also cedes considerable responsibility to municipalities at local level. At this entity level, responsibilities differ between councils and mayors. In the implementation of protection and rescue, the council of the local self-government unit executes the following activities:

For the purpose of executing expert tasks related to the authorities of the local self-government unit in the protection and rescue area, the mayor can appoint a person or establish a division for protection and rescue. The City of Skopje coordinates the protection and rescue activities in its area. The municipalities in the City of Skopje are obliged to cooperate and react in accordance with the directions on protection and rescue received from the City of Skopje. For the purpose of implementing this activity, the City of Skopje is establishing a Protection and Rescue HQ.

### **1.4. Overview of Emergency Management, core functions, vision, mission, values, principles, and components of emergency management**

The pie chart depicted in Figure 1 illustrates the core functions of emergency management in North Macedonia. Each section of the chart represents a distinct aspect of emergency management, all of which are essential in covering the entirety of emergency management within the country. While the segments may appear equal in size and importance, the allocation of resources for their development may differ depending on the specific programs.

The vision, mission, values, principles, and components of emergency management establish the fundamental framework for creating and implementing emergency management programs. They also provide guidance for responding to emergencies effectively. The governance framework outlined in the Protection and Rescue Law ensures accountability, strategic direction, and leadership for emergency management programs and responses. Stakeholders, both formal and informal, encompass individuals and groups that are involved in emergency management activities in North Macedonia. Lastly, the emergency management strategy outlines the goals and objectives that Emergency Management in North Macedonia aims to accomplish.





**Figure 1:** Representation of emergency management in North Macedonia.

### **1.5. Vision, Mission, and Values**

The framework vision of the Emergency Management in North Macedonia encompasses the overarching purpose of the EM programs. The mission aligns with the vision and aims to communicate the strategic goals, activities, and direction to stakeholders. The values represent the fundamental guiding principles that shape decision-making and establish the standards for evaluating EM actions within the programs.

#### **Vision**

A safe, secure, and resilient North Macedonia.

#### **Mission**

Through collaborative partnerships with diverse communities, the focus is on coordinating, developing, and implementing strategies for prevention, mitigation, preparedness, response, and recovery. The ultimate goal is to enhance the safety, security, and resilience of North Macedonia to the fullest extent possible.

## **Values**

Teamwork, excellence, diversity, integrity, accountability, and relationships.

## **2. Principles of Emergency Management**

Emergency management principles are fundamental guidelines or relationships that ideally govern all aspects and programs of emergency management. By universally applying these principles across North Macedonia, it ensures the establishment of consistent and cohesive emergency management programs. Moreover, these principles serve as a compass, guiding decisions and actions throughout the implementation of policies, strategies, plans, and procedures.

North Macedonia's approach to emergency management is rooted in several key principles that serve as the foundation for their practices:

- Flexibility
- Risk and consequence-based
- Comprehensive
- Leadership and partnerships
- Interoperability
- Continuous improvement.

### **2.1. Flexibility**

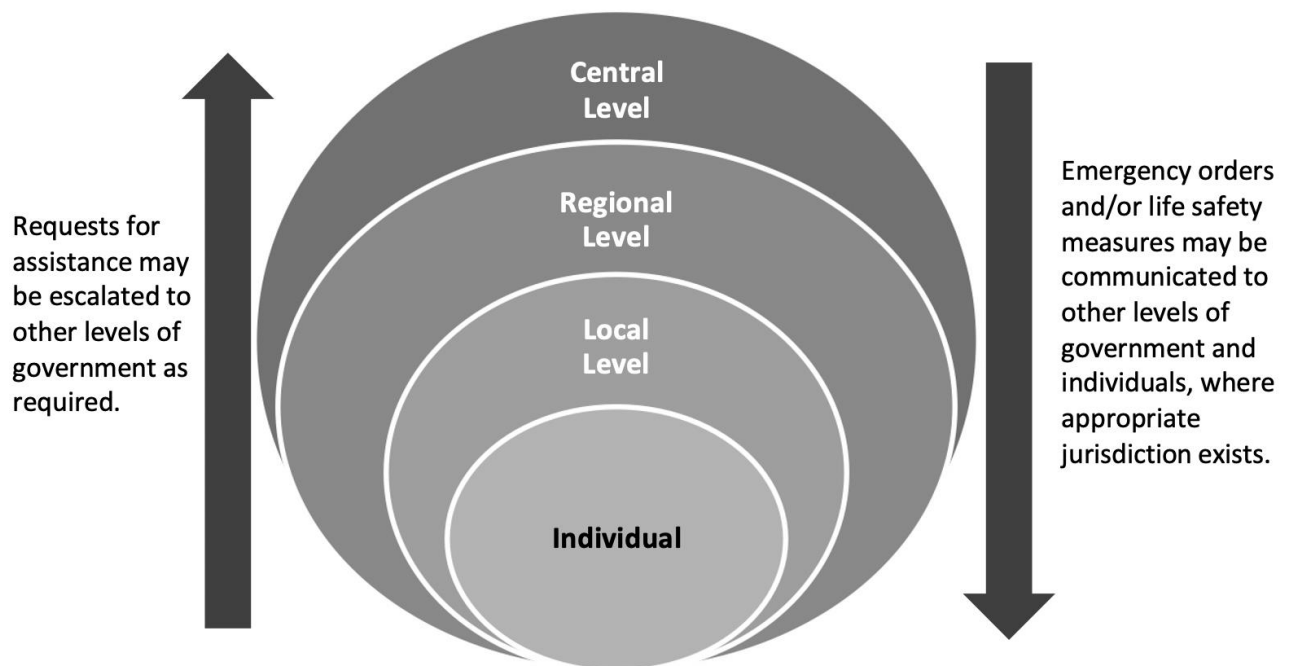
This approach acknowledges the existence of various types of emergencies within the country and acknowledges the need to determine the most suitable approach for each situation. By adopting a flexible approach, emergencies can be addressed using either a decentralized ("bottom-up") or centralized ("top-down") method, or even a combination of both, depending on the specific characteristics of the emergency.

The graduated or 'bottom-up' approach is the most common approach in the country. Preparing for and responding to an emergency often begins with individuals and families. An emergency may escalate beyond the capabilities of individuals and families to the extent of requiring the involvement of their community. The impact of some emergencies can, however, exceed the capacity of available resources within a community. When required, the North Macedonia government, would coordinate and/or provide assistance. If an emergency response requires resources beyond North Macedonian capabilities,

North Macedonia may seek assistance from the EU mechanism for civil protection.

The predominant approach in the country follows a graduated or "bottom-up" method. In this approach, the initial preparation and response to an emergency typically commence at the individual and family level. As an emergency progresses, it may surpass the capabilities of individuals and families, necessitating the involvement of the local community. However, certain emergencies can surpass the resources available within a community to effectively manage the situation. In such cases, the government of North Macedonia would coordinate and potentially provide assistance. If the scale of the emergency exceeds the capacity of North Macedonian resources, the country may seek assistance from the European Union's civil protection mechanism. This mechanism serves as a means to access additional resources and support in response to emergencies.

In certain situations within North Macedonia, a "top-down" approach is employed when management accountabilities have not been delegated by the country. This is particularly relevant for handling nuclear and pandemic emergencies. Even in these cases, the effectiveness of the top-down approach relies heavily on the emergency management capabilities present at the individual and community level. It is crucial for the country to clearly communicate its expectations, just as individuals and communities need to be well-informed about their roles in managing these types of emergencies. It is important to note that the use of a "top-down" approach does not necessarily imply that the emergency originated at a state (central), regional, or local level. Rather, it refers to the communication of management decisions, such as emergency orders or life safety measures, from the state to municipalities and individuals. Figure 2 illustrates that emergencies can be addressed through either a "bottom-up" or "top-down" approach, depending on the nature of the specific emergency.



**Figure 2:** Emergency management approaches

Both approaches acknowledge the diverse roles and responsibilities of individuals, families, and members of the emergency responder community, along with their respective leadership roles.

## **2.2. Risk and Consequence Management**

The initial stages of establishing a robust emergency management program involve the identification and comprehension of hazards through a hazard identification and risk assessment process. These steps are crucial in ensuring public safety and fostering resilient communities to disasters. By conducting a hazard identification and risk assessment, hazards can be prioritized based on their likelihood and potential consequences for a community. This enables emergency managers to adequately prepare for and allocate resources to address these risks.

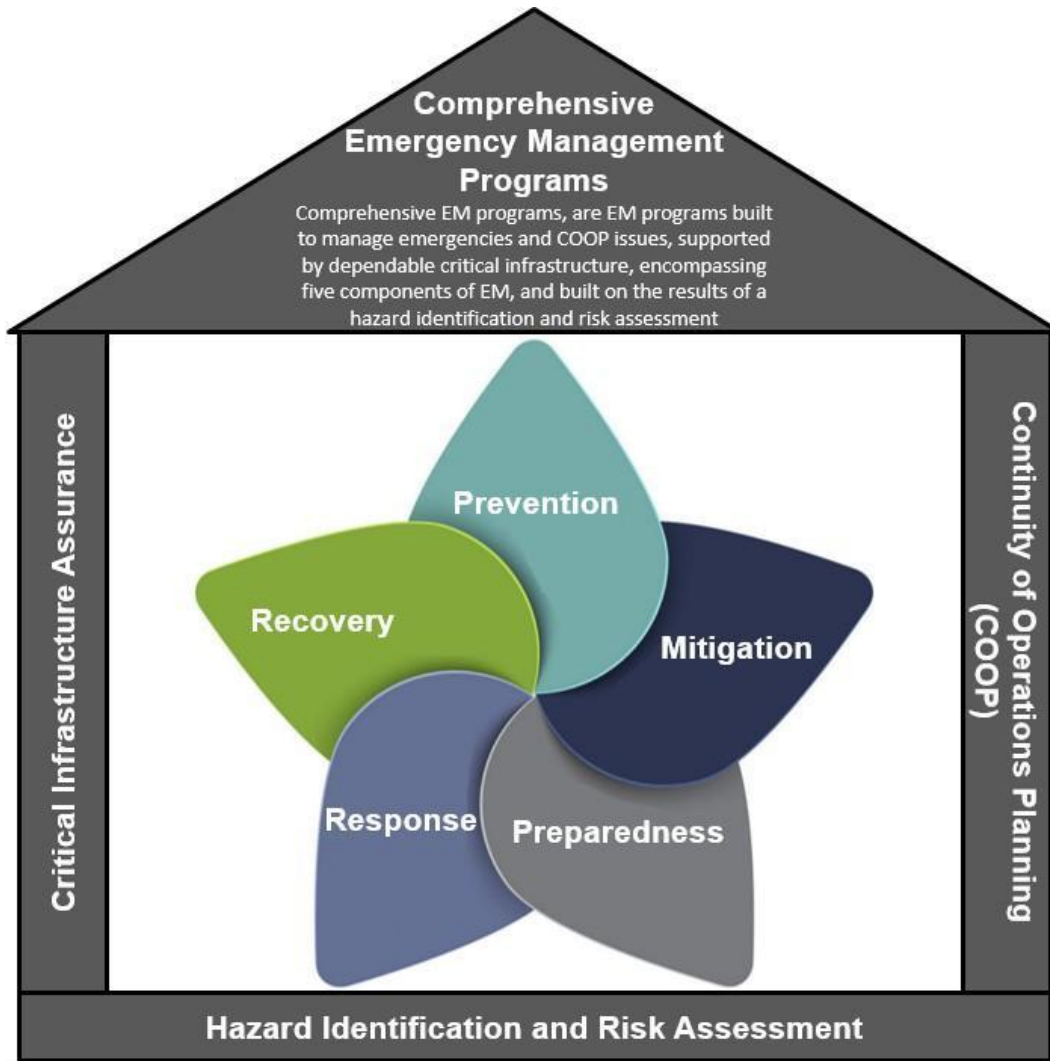
Furthermore, alongside identifying risks, it is imperative to recognize and address the potential consequences or impacts associated with these risks.

## **2.3. Comprehensive emergency management program**

Comprehensive emergency management program refers to emergency management programs that have thoroughly integrated the following elements:

- Components of emergency management (Prevention, Mitigation, Preparedness, Response and Recovery);
- Hazard Identification and Risk Assessment;
- Critical Infrastructure Assurance;
- Continuity of Operations Planning.

A comprehensive emergency management program integrates prevention, mitigation, preparedness, response, and recovery into its operations. It is built upon the findings of a hazard identification and risk assessment, while employing a risk-based approach to planning. Additionally, to achieve comprehensiveness, emergency management programs should incorporate Continuity of Operations Planning (COOP) to guarantee the continued provision of essential functions and services during emergencies. This process involves identifying time-critical functions and services through a risk management approach. Moreover, a comprehensive emergency management program should identify and safeguard critical infrastructure to ensure its preservation and continuity. Figure 3 visually represents the components of a comprehensive emergency management program.



**Figure 3:** The five components of emergency management represented within a comprehensive emergency management program.

#### **2.4. Leadership and Partnerships**

Partnerships play a vital role in preventing, mitigating, preparing for, responding to, and recovering from emergencies while maintaining continuity of operations. Strong and dedicated leadership is essential, as it provides guidance, supervision, decision-making authority, and overall direction. Effective leadership also fosters transparent collaboration and coordination among all partners and stakeholders. By working together, emergency management partners and stakeholders can optimize the utilization of resources and implement the most effective strategies and actions.

## **2.5. Interoperability**

Interoperability refers to the capacity of diverse systems, organizations, personnel, and equipment to effectively collaborate. Achieving interoperability requires the establishment of governance structures and procedures that facilitate coordinated emergency management activities among different organizations and communities. By implementing standardized practices and shared terminology, interoperability enables seamless operation, information sharing, and efficient communication among organizations, thereby minimizing confusion. The outcome of interoperability is enhanced safety for the public and responders, as well as improved efficiency in handling a wide range of incidents, from daily operations to large-scale emergencies.

## **2.6. Continuous Improvement**

Regularly seizing opportunities to identify lessons learned and best practices is crucial for advancing and enhancing emergency management practices and processes. These opportunities can take the form of reviewing after-action reports from exercises or real emergencies, conducting internal and external reviews, engaging in inquiries, and studying academic literature. The insights gained from these sources should be utilized to guide corrective actions and enhance practices, policies, processes, and procedures, with the ultimate goal of continuously improving emergency management in North Macedonia.

## **2.7. Components of Emergency Management**

Emergency management in North Macedonia comprises five interconnected foundational components: Prevention, Mitigation, Preparedness, Response, and Recovery. These components are integral to the work of all emergency management practitioners and organizations in ensuring the safety, security, and resilience of North Macedonia.

Although the components can be implemented sequentially or simultaneously, they are not mutually exclusive. In practice, emergency management activities often span across multiple components, and the boundaries between them are often blurred. Figure 4 depicts the components as equal and overlapping, highlighting their interdependence. However, their application and implementation may vary based on the specific needs of each prog



**Figure 4:** The five components of emergency management.

### 2.7.1. Prevention

Prevention encompasses measures aimed at preventing the onset of emergencies or disasters. These measures can involve the implementation of legislative controls, zoning restrictions, enhancements to operating standards and procedures, or effective management of critical infrastructure. The goal is to proactively intervene and mitigate potential risks in order to avoid the occurrence of an emergency or disaster.

#### *Prevention Strategy Objective*

It is crucial to assess the feasibility of preventing or avoiding hazards and to identify existing vulnerabilities. When it is not possible to completely prevent hazards, the adoption of suitable avoidance measures becomes essential. These measures serve to safeguard the well-being of individuals, protect property and infrastructure, sustain the economy, preserve the environment, and uphold social and governance systems.

Prevention strategies and activities encompass a range of measures to mitigate the occurrence and impact of emergencies. These may include:

- Hazard-specific control programs:
  - Implementing measures to prevent potential flooding, such as constructing levees, dams, floodways, and hydraulic control structures, as well as improving drainage systems and conducting river-dredging.

- Incorporating building design practices and utilizing construction materials that enhance structures' resistance to extreme weather events, chemical, biological, radiological, nuclear, and explosives (CBRNE) threats, and other physical security risks.
- Regulating personal fires, conducting controlled burning, and performing mechanical treatments to prevent forest fires and enhance forest health.
- Critical infrastructure protection and management:
  - Designing critical infrastructure with resilience to withstand adverse conditions and technical failures. Although the Government recognized the necessity to identify critical infrastructure so far there is no identified official list of critical infrastructure.
    - Emergency management's approach to the critical infrastructure is that critical infrastructure consists of essential services such as food and water, telecommunication systems, electrical power systems, gas and oil, financial services, health systems, transportation networks, public safety and security, and continuity of government.

The prevention among others focuses on

- Integrating disaster risk reduction priorities into emergency management programs, taking into account the influence of climate change on natural hazards.
- Implementing legislative and regulatory controls, such as land-use planning, building codes, zoning restrictions, and improved operating standards and procedures.
- Implementing public health strategies and initiatives to address health-related risks during emergencies.
- Enhancing cyber security measures to protect critical infrastructure and systems.
- Establishing effective warning systems to provide timely alerts and notifications to the public.
- Conducting public education and training programs to enhance community preparedness and response capabilities.
- Implementing initiatives to ensure the safe handling and management of hazardous materials.
- Providing financial support through grants, subsidies, and preferential tax codes and deductibles to promote prevention efforts.

These prevention strategies and activities aim to minimize the impact of emergencies, protect lives and property, ensure the resilience of critical systems, and promote a safer and more secure environment for communities.



### **2.7.2. Mitigation**

Mitigation involves implementing measures to lessen the negative effects of an emergency or disaster that cannot be entirely prevented. Mitigation strategies are applicable to both individuals and organizations and are developed based on a thorough risk assessment. These strategies encompass a range of short-term and long-term plans and actions aimed at reducing the impact of potential emergencies.

#### ***Mitigation Strategy Objective***

Mitigation endeavors to decrease or, if feasible, minimize the consequences of disasters by employing strategies that lower risk and vulnerability. It is essential to take into account climate change adaptation initiatives to enhance community resilience and sustainability.

Mitigation strategies and activities encompass a range of measures aimed at reducing the impact of disasters. Some of these programmes are developed while others are under the development. These include:

- The vision for the hazard-specific control programs:
  - Implementing measures to minimize the effects of floods, such as constructing levees, dams, floodways, spillways, hydraulic control structures, control gates, flood detention basins, and improving drainage systems.
  - Undertaking controlled burning and mechanical treatments to improve forest health and prevent small fires from escalating into major, uncontrollable incidents.
  - Monitoring waterway conditions, including ice melt/jams and flow rate, and taking necessary actions like controlled dam releases to mitigate flooding.
- The vision for Critical infrastructure protection and management:
  - Enhancing the resilience of critical infrastructure by employing designs and materials capable of withstanding extreme weather events and technical failures.
- Disaster risk reduction priorities:
  - Ensuring that emergency management programs prioritize disaster risk reduction, considering the influence of climate change on natural hazards.
- Legislative and regulatory controls:
  - Implementing land-use planning strategies, building codes, zoning restrictions, and improved operating standards/procedures to mitigate risks.
- Public health strategies:
  - Implementing measures to safeguard public health in emergencies and disasters.
- Warning systems:

- Establishing effective warning systems to alert communities and individuals about potential hazards.
- Community education and training:
  - Conducting educational initiatives and training programs to increase community awareness and preparedness.
- Hazardous material safety initiatives:
  - Implementing measures to ensure the safe handling and storage of hazardous materials.
- Financial support:
  - Providing financial assistance through grants, subsidies, and preferential tax codes and deductibles to support mitigation efforts.

By implementing these mitigation strategies, communities can reduce the vulnerability and risk associated with disasters, fostering a safer and more resilient environment.

### **2.7.3. Preparedness**

The Emergency management in North Macedonia considers preparedness as the state of readiness that enables effective prevention, mitigation, response, and recovery from emergencies. It involves adequately addressing all the other components of emergency management to ensure comprehensive readiness.

#### ***Preparedness Strategy Objective of the Macedonian emergency management***

The objective of the preparedness strategy objective of the Macedonian emergency management is to ensure that appropriate measures are implemented in the areas of prevention and mitigation, and when needed, to facilitate an effective response and recovery from incidents. The overarching goal remains the protection of life, property, infrastructure, the economy, the environment, and social and governance systems, while also enhancing the efficiency of recovery efforts.

*Preparedness strategies and activities encompass a range of measures, including:*

- Developing and implementing comprehensive strategies and plans for prevention, mitigation, response, recovery, and continuity of operations.
- Conducting thorough hazard identification and risk assessments, as well as identifying critical infrastructure to create a comprehensive risk profile.
- Establishing continuity of operations plans that outline how critical services will be maintained and recovered during a disruptive event.

- Developing and regularly updating emergency procedures and standards to ensure preparedness and effective response.
- Conducting training sessions and exercises to enhance the emergency response capabilities of individuals and organizations.
- Promoting public awareness and education initiatives on personal preparedness, hazard identification, and accessing assistance during emergencies.
- Implementing alerting and notification systems to swiftly communicate important information to the public.
- Establishing resource management procedures to ensure the availability of sufficient personnel, physical assets, information, and financial resources as needed.
- Installing hazard monitoring devices to improve early warning capabilities and enhance situational awareness.

#### **2.7.4. Emergency management's approach to response**

Response involves the prompt actions taken before, during, or immediately after an emergency to effectively manage and mitigate its consequences. This includes activating and implementing the relevant response plan(s), as well as ensuring the availability and strategic placement of necessary resources like personnel, services, and equipment. It also involves establishing and staffing a response structure, activating protocols for collecting and sharing vital information, and developing a tailored action plan specific to the incident at hand to address the emergency situation.

#### ***Response Strategy Objective***

The primary objective of the response strategy is to promptly initiate a well-coordinated and efficient response to the emergency, aiming to prevent any loss of life, injuries, health risks, property damage, disruption of livelihoods and essential services, as well as minimize social, economic, and environmental impacts.

The strategies and activities for response encompass a range of actions that can be implemented during an emergency. These include:

- Activation and implementation of emergency response plans and continuity of operations plans.
- Establishment of operational procedures to facilitate the execution of response plans.
- Implementation of a coordination mechanism to ensure collaboration among all stakeholders involved in the response.

- Adoption of a standardized incident management system to streamline response efforts.
- Implementation of procedures for situational awareness, including conducting threat and impact assessments and identifying necessary resources for emergency and continuity operations.
- Development and maintenance of procedures that define clear leadership roles, establish a chain of command, and identify alternate personnel.
- Ongoing evaluation of the response to assess its effectiveness and make necessary modifications to the response plan.
- Documentation of lessons learned during and after the incident, and implementation of corrective actions based on those lessons.
- By implementing these response strategies and activities, emergency management practitioners aim to effectively coordinate and execute response efforts, ensure effective leadership and decision-making, and continuously improve response capabilities based on lessons learned.

#### **2.7.5. Recovery in the Macedonian Emergency Management**

Recovery involves the actions taken to restore a community that has been impacted by a disaster to its previous state or even a better condition. This process includes various measures such as providing financial support, rehabilitating essential infrastructure and natural habitats, facilitating the return of evacuees, restoring the environment, and offering critical incident stress counseling. Additionally, recovery efforts incorporate risk reduction elements that encourage all stakeholders, including communities and residents, to rebuild in a more resilient and sustainable manner. The goal is to not only recover from the immediate impacts of the disaster but also to enhance preparedness and mitigate future risks.

##### ***Recovery Strategy Objective***

The objective of the recovery strategy is to provide efficient and continuous support to individuals, communities, and organizations in order to address their emotional, social, physical, environmental, and financial needs. The recovery process aims to ensure the well-being of all stakeholders by utilizing a risk reduction framework that integrates prevention and mitigation elements, as well as promotes a higher level of preparedness. By incorporating these components, the recovery strategy strives to enhance the overall resilience and preparedness of the affected entities.

*Recovery Strategies and activities could include the following:*

- Execute recovery plans that prioritize short-term and long-term objectives to restore functions, services, resources, facilities, programs, and infrastructure.

- Implement plans for psycho-social recovery to address the emotional and social well-being of affected individuals and the community.
- Employ procedures to restore and resume operations, transitioning from temporary measures to support the return to normal functioning after an incident.
- Establish a proactive communication strategy to keep the community informed about ongoing actions and progress during the recovery process.
- Acknowledge the significance of a systematic approach in integrating prevention and mitigation strategies into recovery programs.
- Regularly reassess recovery plans and strategies to ensure the continued relevance and effectiveness of prevention and mitigation priorities.

### **3. Areas included in the E.M.F.s**

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#### **3.1. Flood Emergency Management Framework (Flood EMF)**

##### **3.1.1. Introduction**

Macedonian emergency management system aims to comply with the EU and NATO regulatory and guiding terms. Therefore, most of the definitions are accordingly adopted as such and based on that appropriate measures, procedures and standard operational procedures have been developed. The definition of flooding is that of the Directive 2007/60/EC, which addresses the assessment and management of flood risks, a flood is defined as the temporary presence of water on normally dry ground. This encompasses various types of flooding, including river floods, mountain stream floods, floods from lakes and groundwater, coastal floods, and floods caused by marine gravity waves. It also encompasses floods resulting from failures of significant hydraulic structures like levees and dams.

In the same directive, flood danger is defined as the combination of the probability of a flood occurring and the potential negative consequences it poses to human health, the environment, cultural heritage, and economic activities. The most common types of floods are those caused by natural factors, which can be classified as terrestrial or riverine floods and coastal floods. Terrestrial or riverine floods typically result from intense rainfall, snow melting, or a combination of both, leading to a sudden increase in river discharge. They can be further categorized as slow development floods, which occur gradually, and rapid development floods or flash floods, characterized by their swift evolution.

Flash floods, with their rapid onset, are often associated with particular geomorphological features, such as numerous small basins with steep slopes that facilitate quick drainage. These flash floods have historically caused significant damage to infrastructure, agricultural areas, and residential properties, posing risks to human lives through incidents like pedestrian and vehicle entrainment.

The emergency management framework in North Macedonia recognizes that intensity, duration, and spatial pattern of rainfall play a significant role in causing floods. However, the occurrence of a flood event is influenced by several other factors that can either inhibit or enhance it. These factors include:

- The capacity of the hydrographic network to efficiently drain surface water runoff.
- The geology, size, and geomorphology of the catchment area.
- The level of saturation of the topsoil due to previous rainfall.
- The vegetation cover on the soil.
- The land use patterns in the area, among others.

### **3.1.2. Operationalizing the planning process**

In general the planning process for flooding emergency management must be dynamic, i.e. adaptive and flexible. It must be accustomed to the specifics of the terrain, for accomplishment of a certain set of activities with the aim of preparation and effective response to occurrence of floods, including strengthening of institutional capacities, planning and mechanisms for creating flood risk reduction policies. In particular, the plan should focus on Prevention, Protection and Preparedness. The effective ones information, Early Warning Systems and Flood Risk Maps are basis for effective flood management policies and plans, as well as efficiently networking and coordination between competent authorities in water management different levels. Adequate policies to reduce vulnerability and increase flood resilience are also important areas.

This plan is put into action and executed to address the following objectives:

- Enhancing preparedness measures in response to the imminent threat of flood events.
- Managing emergencies and promptly addressing the immediate and short-term impacts resulting from flood occurrences.

The activation and implementation of the flood EMF is not dependent on the issuance of a decision declaring the area in a State of Civil Protection Emergency.

Furthermore, the mobilization of emergency actors/forces, as well as the involvement of the health sector, is determined by the local community (or at national level, national) respective operational planning and the decisions made within their institutional frameworks, independent of declarations of a disaster or the designation of an area in a state of civil protection emergency.

Coordination, as defined under this planning process, involves organizing and maintaining collaboration between various organizational units, services, agencies, and management structures, as well as other entities involved in civil protection as the inherent part of the flooding emergency management framework , to ensure cohesive and synchronized actions.

The specific units, human resources, and resources utilized in the implementation of this plan are determined by the organizational structure, institutional framework, and regulatory protocols of the relevant stakeholders to support the community authorities and defined in the emergency management system with specific role and responsibilities. According to the existing laws and strategic framework the relevant stakeholders for flood emergency management are the Water Sector under the Ministry of Environment and Spatial planning (MZSPP), the Crisis Management Center, four representative municipalities which have a history of floods (Kicevo, Plasnica, Makedonski Brod and Saraj), the Administration for hydrometeorological affairs of the Republic of North Macedonia.

In this line, it is important to note that the EMF serves as a foundation for implementing a range of actions that can vary depending on the requirements of managing a catastrophic event, as determined by the involved agencies. The scope of these actions is not limited or restricted by the EMF.

Documents and essential components	Main tasks	Relevant stakeholder	Note
Institutions and legislation	Flooding risk Maps developing	Ministry of Environment and Spatial planning Water sector	
System of data and hydrometeorology	Monthly assessments and analysis of flooding risks	Hydro-methodology directorate	
System for decision support	Risk assessment on a monthly basis and early warning reports and guidance	Emergency (Crisis) management center & Hydro-methodology directorate	
Municipality plan for flood emergency management	Local plan development	Municipality and local authorities	

### 3.1.3. Purpose

The primary purpose of the EMF is to ensure a prompt and coordinated response from the relevant designated stakeholders at the National, and Local community level. This response includes:

- Implementing preparatory measures and civil protection actions that enhance the preparedness of human resources and resources for responding to emergencies and managing the immediate consequences of flood phenomena.
- Facilitating the effective response of the involved agencies to flood emergencies and the immediate management of their consequences. These actions aim to safeguard the lives, health, and property of citizens, as well as protect the natural environment, economic resources, and national infrastructure.

To achieve this objective, it is essential to foster synergy, cooperation, and interoperability among the participating Agencies at all levels, including Central, Regional, and Local.

### 3.1.4. Objectives

The objectives of this section of EMS are as follows:

- Clearly defining the roles and responsibilities of all participating Agencies at the National, and local community level throughout the entire mobilization process of the Civil Protection system.



- Establishing preparatory measures and civil protection actions that enhance the preparedness of human resources and resources for responding to emergencies and managing the immediate consequences of flood phenomena.
- Ensuring coordination and alignment of the planning efforts of all relevant stakeholders with the EMF.

### 3.1.5. Risk Analysis

Analysing the the risk of floods or the flood risk – requires to consider the overall term used to define the phenomenon and the possibility that a particular area may be subject to flooding. Usually the risk of flooding is used to calculate the material damage and threat to life. A useful formula for assessing the risk of flooding could be one that considers probability and consequences expressed in numerical terms where:

$$\text{Risk} = \text{Probability} \times \text{Consequences (1)-equation}$$

Risk is the result of the probability of a flood (usually stated as a 1 in chance in a year) multiplied by the consequences (or value of the damage) of the flood. Therefore, even if the probability of a natural flood is high, if there is zero damage (or consequences) from the flood, then the risk is also zero. This, however, changes if there is an identified hazard(s). The hazard in this context means the “the assumed level of flooding with identified-defined probability of occurrence. For example, statistically the risk analysis could be predicted that the flooding of 50 m<sup>3</sup> could occur on a location X with the probability rate of 5% (1 in 20 rate) each year.

$$\text{The danger(hazard)=source+trajectory+receptor (2) equation}$$

In other terms the risk of flooding means that there is a source (reason) for flooding (example heavy rainfall) following the trajectory, for example floodplains that can influence the receptor (population). Therefore it looks like that the risk of flooding must incorporate the whole three elements. The combined probabilities of the sources, hazards and receptors of equation (2) represent the same as the single overall probability expressed as a fraction of equation (1). That's why we can say that danger is synonymous with probability, but it probability uses only one term, while hazard uses 3 terms.

For the analysis to be completed as the source for planning there must be consequences. Even if there is a flood, if there is no significant damage or loss, then there is none consequences. Consequences have the following components:

$$\text{Consequence} = \text{Exposure} \times \text{Vulnerability (3) equation}$$

Exposure in the simplest way can be defined as the amount of assets (people, property, infrastructure, land or service) that could be damaged by flooding. Therefore, physical elements of i) spatial extent of the flooded area ii) depth and flood durations are dominant in quantifying exposure. Vulnerability can be defined most simply as the sensitivity of the environment (the object) exposed to flooding, usually

expressed as economic loss. The more vulnerable the environment, the higher the amount (cost) of the damage if it is flooded.

The assessment and management of flood risks are essential, leading to the initiation of flood protection projects through a comprehensive framework aimed at minimizing their negative impacts.

To facilitate this process, the country should be divided into Water Divisions, and the creation of Flood Danger Maps and Flood Risk Maps should be undertaken, in compliance with the directives of the European Commission's European Environment Information and Observation Network (<http://cdr.eionet.europa.eu/gr/eu/floods/>).

Moreover, it is crucial to develop and approve Flood Risk Management Plans for high flood risk zones within each Water Department. These plans should outline the primary objectives for flood risk management, the necessary measures, and the priorities to achieve these objectives, along with preliminary Flood Risk Assessment maps.

To ensure transparency and accountability, the Approved Flood Risk Management Plans should be published on the public (municipality) website, adhering to the requirements of the European Flood Directive (2007/60/EC) and national legislation.

### **3.1.6. Situation**

Floods are a type of natural disaster that occur frequently and can be categorized as terrestrial or riverine and coastal floods.

Terrestrial or riverine flooding is typically caused by heavy rainfall from storms, the rapid melting of snow, or a combination of these factors, resulting in a significant increase in river discharge. Failure of large hydraulic structures can also contribute to such flooding.

Terrestrial or riverine floods can be further classified into slow-developing floods (field floods) and rapid-developing floods (sudden or flash floods).

Flash floods, characterized by their rapid progression, occur due to unique geomorphological features that give rise to numerous streams with relatively small drainage basins. These streams are characterized by steep slopes, facilitating fast drainage. Flash floods have historically caused severe damage to infrastructure, agricultural areas, and residential areas, endangering human lives through the entrainment of pedestrians and vehicles.

Additionally, flood events can trigger secondary natural or technological disasters, such as landslides or the release of hazardous substances.

### **3.1.7. Assumptions**

The occurrence of flood phenomena can lead to several consequences, including:

- Injuries and loss of human life, causing a sense of insecurity among the population.

- Damage to the infrastructure of the country.
- Direct and indirect financial losses, affecting citizens' properties, primary sectors such as agriculture and animal husbandry, various infrastructures like electricity and telecommunications networks, and potentially impacting the tourism industry as well.

### **3.1.8. Conditions**

The following conditions must be met for the implementation of the EMF:

- Clarifying the roles and responsibilities of all relevant civil protection entities, based on the existing institutional framework.
- Reviewing, updating, and aligning civil protection plans of these entities with the present plan, and creating or revising corresponding action memoranda.
- Determining the available human resources and assets at the Central, Regional, and Local levels to address emergencies and manage the immediate consequences of flood phenomena.
- Ensuring the preparedness of all participating agencies at each operational stage.
- Facilitating effective communication among all involved parties to ensure smooth information flow.

### **3.1.9. Design Parameters**

- Flood phenomenon with consequences in infrastructure, residences, as well as the citizens' health.
- Involvement of agencies at Central, Regional and Local level.
- Impossibility of immediate/short-term management of the consequences at the local level.

### **3.1.10. Concept of Operations**

In line with this plan, the following key actions are initiated:

- Strengthened preparedness measures to mitigate the risks related to floods.
- Actions taken to respond to emergencies and manage the immediate and short-term impacts of flooding.

The underlying principle guiding the implementation of the EMF is the collaboration and coordinated efforts of all participating Agencies, as stipulated by the existing institutional framework. These Agencies

are activated during each phase of the Civil Protection Mobilization System, including standard readiness, heightened readiness, direct mobilization and intervention, and rehabilitation.

### **3.1.11. Preparatory Actions (Normal Readiness – Phase 1)**

During this phase, all relevant stakeholders engage in preparatory measures and activities to enhance their readiness in handling emergencies. These measures encompass various aspects such as equipment maintenance, establishing effective communication channels, creating memoranda of cooperation, convening civil protection coordinating bodies, and other relevant actions aimed at effectively responding to emergencies.

The following preparatory actions and measures are primarily undertaken during this phase:

- Reviewing, updating, and aligning the civil protection plans of the involved stakeholders with the EMF, while also drafting or revising existing action memoranda to ensure their compliance.
- Securing the necessary financial resources for implementing the planned actions outlined by the involved entities, which includes maintaining and operating machinery and equipment, procuring additional resources, hiring seasonal personnel, and ensuring the availability of required materials.
- Monitoring and ensuring the smooth operation of the communication system and information flow to facilitate secure exchange of information among the involved agencies.
- Conducting thorough checks to ensure the proper functioning and maintenance of equipment and media necessary for handling emergencies and effectively managing the immediate and short-term consequences of flood phenomena.
- Developing memoranda of cooperation with private entities to acquire additional resources and strengthen collaborative efforts in addressing emergencies and managing the aftermath of flood events.
- Conducting public information campaigns and raising awareness among citizens about preventive measures and self-protection strategies to mitigate risks associated with floods.
- Establishing and organizing damage recording committees to assess and provide financial aid to individuals in need as a result of flood incidents.
- Organizing preparatory meetings and coordination sessions involving the Local Coordinating Agencies of Municipalities and Civil Protection Coordinating Agencies of Regional Units to effectively address flood risks.
- Ensuring seamless interconnection and collaboration among the Operational Centers of the involved agencies at the central level.

- Developing training programs and conducting exercises for personnel involved in civil protection actions, specifically tailored to address the risks and challenges associated with flood incidents. These training programs and exercises are designed, conducted, and evaluated based on established protection policies and guidelines.

### **3.1.12. Actions of increased preparedness in view of a threatened risk for the event of flood phenomena (Increased Preparedness - Phase 2)**

The level of preparedness within civil protection is determined by referring to the information presented in the Emergency Deterioration Weather Bulletins and Hazardous Weather Forecast Bulletins issued by the Meteorological Service. The heightened preparedness of the involved agencies primarily involves the following measures:

- Ensuring the prompt readiness of personnel and resources to effectively respond to emergencies and handle them in the immediate or short-term.
- Disseminating information to the public, emphasizing the importance of implementing self-protection measures.
- Providing specific weather-related guidance and advisories to farmers, breeders, and beekeepers.

Whenever the Meteorological Service releases Emergency Weather Deterioration Bulletins and Hazardous Weather Forecast Bulletins, it is crucial for all agencies to consider these updates in order to activate the appropriate level of civil protection readiness.

The occurrence of floods is influenced not only by the intensity, duration, and spatial distribution of rainfall but also by a variety of additional factors. These factors can either hinder or amplify the likelihood of flood events. Some of these contributing factors encompass:

- The efficiency and capacity of the hydrographic network to effectively drain surface runoff.
- The unique characteristics of the catchment area, encompassing factors such as geology, size, and geomorphology.
- The degree of saturation in the surface soil resulting from preceding rainfall events.
- The presence and condition of vegetation in the surrounding area.
- The diverse land uses and activities within close proximity to the area of concern.

### **3.1.13. Actions of increased preparedness in view of a threatened risk for the event of flood phenomena (Increased Preparedness - Phase 3)**

During this phase, various measures are implemented to effectively address the risks associated with floods. These measures include:

- Conducting search and rescue operations to locate and rescue citizens in distress.
- Implementing road traffic management measures to ensure the smooth movement of emergency vehicles and enhancing surveillance and control, particularly at vulnerable points where the road network intersects with unbridged streams (known as Irish crossings) to prevent accidents during vehicle crossings.
- Taking necessary actions to protect citizens and workers in infrastructure or facility operations such as archaeological sites, camps, hospitals, military facilities, etc., in accordance with emergency evacuation plans.
- Making decisions regarding the organized evacuation of citizens from affected areas.
- Clearing the road network to facilitate the movement of emergency vehicles and restore accessibility.
- Inspecting the drinking water supply network, including the aqueduct and distribution network, to ensure the quality and availability of drinking water.
- Conducting visual inspections of infrastructure and technical works to assess damages caused by floods or related phenomena like landslides, and evaluating the resources required for immediate rehabilitation.
- Ensuring the continued operation of local services following flood events and maintaining communication with other operational stakeholders.
- Addressing health incidents affecting civilians and providing necessary medical support.
- Implementing order and security measures, as required, to safeguard the lives and property of citizens in affected areas.
- Restoring the operation of power supply networks and other essential services that have been damaged or disrupted due to the impact of floods.
- Informing the public about civil protection measures and actions taken during emergency response.
- Educating the public on measures to protect their health and well-being during flood events.
- Cleaning debris, wells, and other flood prevention structures within flooded areas to restore their functionality and effectiveness.

- Restoring the accessibility of blocked roads by removing debris and floodwaters from the road surface.
- Verifying the proper functioning of flood prevention structures and ensuring their integrity.
- Repairing damages to the water supply and drainage networks to restore their normal operation.
- Declaring a State of Civil Protection Emergency in the affected area, if necessary.
- Making decisions to suspend classes due to the extraordinary circumstances caused by the floods.

#### **3.1.14. Immediate relief actions for those affected and immediate/short recovery of the consequences of the disaster (Recovery / Relief– Phase 4)**

In this phase, additional measures are implemented to provide assistance to those affected by the floods, and a thorough assessment of the damages is conducted to determine the immediate or short-term restoration actions needed. The key focus areas during this phase include:

- Providing accommodation support to affected citizens who are unable to stay in their homes due to the disaster, ensuring their temporary housing needs are met.
- Offering financial assistance to cover basic necessities and replace household appliances for individuals and families impacted by the floods.
- Identifying the areas that have been affected by the flood for the distribution of financial aid and support.
- Providing financial aid and support to industrial and artisanal units, shops, agricultural establishments, other businesses, and non-profit organizations that have been adversely affected by the floods.
- Documenting and compensating for damages to livestock, crops, and other agricultural assets caused by the flood phenomena.
- Swiftly restoring communication and electricity networks through the efforts of relevant operation and maintenance agencies to ensure essential services are reinstated.
- Restoring the road network by removing debris and obstructions, and taking necessary actions to ensure the transportation infrastructure is functional again.

It is important to note that the immediate or short-term recovery actions primarily involve urgent technical tasks such as pumping out floodwaters, clearing transportable materials, removing debris from roads, and addressing blockages in the rainwater network.

It is worth mentioning that the subsequent mid-term and long-term restoration efforts, as well as the mitigation of risks associated with catastrophic flood events and the necessary urgent rehabilitation works in the affected area, are beyond the scope of this Emergency Management Framework.

## **3.2. Wildland Urban Fire Emergency Management Framework**

### **3.2.1. Introduction**

The Republic of North Macedonia is geographically divided into 8 Statistical Regions, which serve legal and statistical purposes. These regions are Eastern, Northeastern, Pelagonia, Polog, Skopje, Southeastern, Southwestern, and Vardar. Additionally, the country is further subdivided into 84 administrative municipalities.

Since 30 July 2021, North Macedonia has been experiencing a heat wave, resulting in severe wildfires across multiple regions. Despite the extensive efforts of state institutions responsible for crisis management and the local population, the fires have been ongoing for over 16 days.

The intense heat and high temperatures have led to recurrent and widespread fires in various parts of the country. These devastating fires have caused significant damage to forests, fertile land, crops, and personal property. One fatality and several injuries, primarily from smoke inhalation, have been reported. Numerous houses and other structures in many villages have been destroyed or damaged.

The eastern half of the country, known for its dryness, has been the most severely affected area. The loss of every forest in this region has negative implications for the local climate. The destruction of pastures poses a threat to the livelihoods of local farmers, and the scorched hillsides now present an additional risk of landslides and flash floods.

The most impacted regions include Strumica, Kochani, Kumanovo, Gevgelija, Valandovo, Bitola, Prilep, Shtip, Berovo, Pehchevo, Delchevo, Skopje, Radovish, Ohrid, Kriva Palanka, and Veles.

The Emergency (crisis) management center has coordinated its efforts to extinguish the fires and provide assistance to the affected population. Response teams from the Fire Brigade, Crisis Management Centre, Directorate for Protection and Rescue, Army, and the Red Cross of the Republic of North Macedonia have collaborated in the field to manage and respond to the emerging situation.

However, due to limited state resources for firefighting, the wildfires have expanded to almost the entire territory of the country.

### **3.2.2. Instructions for the activation and implementation of the Plan**

The Fire Brigade is entrusted with the responsibility and operational planning for fire suppression and providing assistance in rescuing individuals and property endangered by fires.

Operational planning involves organizing, managing, and coordinating all fire and rescue forces, equipment, and resources involved. "Suppression operational planning" encompasses measures that



ensure early detection, notification, and intervention to promptly and effectively address fires and the associated risks.

Specifically, actions related to forest fire management and suppression are primarily carried out at the local level by the competent services of the Fire Brigade in accordance with their operational plans.

Other civil protection bodies as explained above (such as the Directorate for Protection and Rescue, the Army, and the Red Cross of the Republic of North Macedonia) may also support this endeavor. The assistance of additional operational resources in the Fire Brigade's work is requested by the responsible officer overseeing the firefighting operation.

Resources available to support the Fire Brigade in controlling and suppressing forest fires, such as water tankers and machinery, are under the authority of the designated officer who is also responsible for their utilization at the local level.

The coordination of allocating resources from Municipalities and Regions to support the Fire Brigade's efforts in controlling and suppressing forest fires falls within the purview of the Decentralized Bodies of Civil Protection, including the Mayor, Deputy Regional Governor, and similar authorities.

This plan is activated and implemented on a daily basis during the fire fighting season (or when it is required outside the fire fighting season) to take measures and implement actions:

- increased preparedness in view of the threatened risk of the occurrence of forest fires
- supporting the fire department in task of suppressing forest fires
- emergency response and management of the consequences due to forest fires

This plan is not an operational plan of the Fire Brigade for the announcement, control and suppression of forest fires, but its purpose is the coordinated response of all civil protection agencies involved a) to support the work of the Fire Brigade in suppressing forest fires, which is carried out based on its operational planning and b) to effectively deal with emergencies and the immediate/short management of their consequences.

It is clarified that the issuance of a decision to declare the area in a civil protection emergency is not a condition for the activation and implementation of this plan.

Coordination in this plan means the organization and maintenance of cooperation between the various organizational units of a service or an agency or a management structure, as well as between agencies or services or other involved potential and means of civil protection, to ensure unified and synchronized action.

The involved units of each institution, the human resources and means that will be called upon to implement them, are determined by its organizational structure, its institutional framework of operation and the regulatory acts of its administration.

This plan is activated and executed regularly during the fire season or as needed even outside of the fire season. Its purpose is to take measures and implement actions in the following areas:

- Enhancing preparedness in anticipation of the potential risk of forest fires.

- Assisting the fire department in suppressing forest fires.
- Managing emergency response and the aftermath of forest fires.

It's important to note that this plan is not the operational plan of the Fire Brigade for announcing, controlling, and suppressing forest fires. Instead, its main objective is to facilitate coordinated responses from all civil protection agencies involved. These responses aim to support the Fire Brigade's efforts in fire suppression, which are carried out based on their own operational plans, as well as effectively addressing emergencies and managing the immediate or short-term consequences of forest fires.

It should be clarified that the decision to declare an area as a civil protection emergency is not a requirement for activating and implementing this plan.

Coordination within this plan entails organizing and maintaining cooperation among different organizational units within a service, agency, or management structure, as well as between various agencies, services, and other civil protection entities. The goal is to ensure unified and synchronized actions.

The specific units, human resources, and resources involved in implementing this plan are determined by the organizational structure of each institution, its institutional framework for operation, and the applicable regulations set forth by its administration.

It's important to emphasize that the institutional framework provides the foundation for implementing a range of actions, which may vary depending on the management requirements of each catastrophic event as determined by the involved bodies. This framework is not restrictive in terms of the scope of actions, whether they are aimed at supporting the Fire Brigade's fire suppression efforts or dealing with emergencies and managing the immediate or short-term consequences of forest fires.

### **3.2.3. Purpose**

The purpose of this part of the EMF is to ensure an immediate and coordinated response from the Agencies at the Central, Regional, and Local levels. This response is focused on two main goals:

- Supporting the Fire Brigade in their efforts to suppress forest fires.
- Effectively responding to emergencies caused by forest fires and managing their consequences. This includes actions to safeguard the well-being and property of citizens, as well as the protection of the natural environment, vital resources, and infrastructure of the country.

To achieve this objective, it is essential to foster synergy, cooperation, and interoperability among the involved agencies at all levels: Central, Regional, and Local.

### **3.2.4. Objectives**

The objectives of this section of the EMF are:

- Defining the roles and responsibilities of all participating agencies at the Central, Regional, and Local levels throughout the mobilization phases of the Civil Protection system.
- Coordinating the actions of the involved agencies to support the Fire Brigade's efforts in suppressing forest fires, including timely mobilization to control fire incidents during their early stages.
- Coordinating the actions of the involved agencies in responding to emergencies caused by forest fires and managing their immediate/short-term consequences.
- Ensuring alignment and consistency of the planning efforts of all participating bodies with the current EMF.

### **3.2.5. Risk Analysis**

The identification of high-risk areas prone to forest fires within the country is crucial. To support the administration and enhance public awareness in effectively addressing forest fires, a Daily Fire Risk Prediction Map is generated and published during the fire season, overseen by the PDR (Public Directorate of Rescues). The primary objective of this map is to provide relevant agencies involved in forest fire management with information about areas with a high risk of fire occurrence and spreading over the next 24 hours. It should be noted that the map does not predict real-time fire behavior.

The inclusion of the Fire Risk Prediction Map as an integral part of forest fire response planning is essential. It significantly contributes to proactive organization, coordination, and preparedness of the involved entities. Additionally, it raises public awareness to prevent forest fires caused by negligence.

The preparation of the Daily Fire Risk Prediction Map requires the expertise of knowledgeable professionals, including foresters and meteorologists. The map should be issued annually from June 1st to October 31st, and the preparation process should be completed by 12:30 PM the day before it becomes valid.

The administrative boundaries of the country's Forestry Departments serve as the minimum geographical division for assessing fire risks on the Daily Fire Risk Prediction Map. These boundaries are closely linked to the country's forest complexes. By presenting the data in a map format, a comparative evaluation of various depicted regions can be achieved.

The Fire Risk Prediction Map, released by the PDR, includes risk categories with corresponding numerical ratings from 1 to 4, representing low, medium, high, and very high risks. Typically, category 5, which corresponds to an Alert status, seldom appears on the map. The analysis of the risk categories is as follows:

- Risk Category 1 (Low): The risk level is low, indicating a relatively low probability of fire occurrence. If a fire does start, the conditions, such as fuel condition and meteorological factors, are not expected to contribute to its rapid spread.

- Risk Category 2 (Medium): The risk level is typical for the summer season. Fires that may occur are anticipated to be of moderate difficulty in terms of containment.
- Risk Category 3 (High): The risk level is high, indicating an increased likelihood of fires, many of which may be challenging to manage due to favorable local conditions such as topography and local winds.
- Risk Category 4 (Very High): The risk level is particularly high, suggesting a significant number of fires are expected, and any fire has the potential to escalate into a large-scale incident if it spreads beyond the initial outbreak.
- Risk Category 5 (ALERT Status): The risk level is extreme. A substantial number of fires are anticipated, and all fires have the potential to quickly grow and exhibit extreme behavior immediately upon ignition. Controlling fires under such conditions is expected to be exceptionally difficult until there are changes in the fire development conditions.

The categorization of an area as a very high risk (category 4) or alarm status (category 5) does not guarantee the occurrence of a fire in that specific location. Informing citizens through press releases plays a crucial role in preventing negligent actions that could potentially start fires. Preventing such incidents is one of the objectives of the risk ranking system. Furthermore, even areas classified as low risk are not immune to the possibility of fire outbreaks.

To effectively utilize the Daily Fire Risk Prediction Map, it is essential for all agencies involved in forest fire management to escalate their preparedness and take appropriate measures according to the different risk categories. Treating different risk levels uniformly, especially for risk categories 1, 2, and 3, without adapting corresponding measures and actions in the planning process, underutilizes the potential of the Daily Fire Risk Prediction Map as a decision-making support tool. This uniform treatment may lead operators to misjudge the required level of preparedness.

The responsibility for issuing guidelines to implement measures and actions based on the risk assessment provided by the Fire Risk Prediction Map lies with the respective administrations of the organizations involved, to the extent of their involvement. These administrations are accountable for developing and implementing appropriate measures based on the predicted risk levels.

The level of preparedness and the specific actions to be taken by each agency involved are determined by their operational planning in accordance with the predicted risk level. Additionally, when the risk forecast indicates a very high risk (category 4) or reaches a state of alarm (category 5), a special warning signal will be issued.

It is expected that the Departments of Civil Protection in each region will effectively inform the Regional Governor and transmit the Fire Risk Prediction Map and the special warning signal to the Civil Protection departments of the Regional Units and the competent Deputy Governors. Specifically, for areas where the risk forecast falls within the very high (category 4) to alarm (category 5) range, the PDR will exercise its

discretion to issue warning announcements accompanied by appropriate instructions. The purpose of these announcements is to inform the public in these areas and prevent negligent actions that could trigger fires.

In situations where a very high risk is predicted, and the prevailing conditions in the next 24 hours are conducive to fires with extreme behavior, the PDR may request additional preventive and preparedness measures from the civil protection bodies responsible for forest fire management. This proactive approach becomes necessary when the existing conditions (such as prolonged drought, high temperatures, etc.) and the anticipated conditions in the coming days create a favorable environment for numerous fires, which could escalate if they escape initial containment efforts or exhibit extreme behavior after ignition (risk categories 4 and 5). Consequently, the operationally involved agencies need to develop specialized plans for personnel and resources to implement preventive and preparedness measures.

### **3.2.6. Situation**

Forest fires fall under the category of natural disasters and can be triggered by natural causes like lightning or human activities such as burning crop residues near forested areas or using tools that create sparks. These fires have significant consequences, including psychological impacts on humans, disruptions to human activities, infrastructure destruction, and the subsequent risk of catastrophic floods and land erosion, leading to gradual desertification in affected regions.

Approximately 30% of the country's land is covered by forests, and forest management faces various threats and challenges. These include issues like illegal logging, a history of forest fires that have affected nearly 100,000 hectares over the past decade, the impact of climate change resulting in increased forests dieback, insect infestations, and diseases.

In Europe, forests cover around 30% of the total land area. As the climate warms, it is projected that the northern range limits of most native tree species in Europe will expand, while the southern boundary of some species will shift northward, particularly at the transition between steppe and forest regions. Reduced moisture due to rising temperatures and potential decreases in summer rainfall may lead to decreased productivity in central and southern Europe. The combination of higher summer temperatures and reduced precipitation can also increase the risk of forest fires. Forest productivity and total biomass are expected to increase in the northern regions but decrease in central Europe, while tree mortality rates are likely to accelerate in the southern areas.

Climate change in North Macedonia is expected to have various impacts on forestry based on historical data and climate change scenarios. These impacts may include more pronounced changes in the morphology of oak and fir trees, an increase in the frequency and extent of forest fires due to a higher proportion of dead trees, and a shift in the distribution of tree species towards higher altitudes.

To adapt to rising temperatures and reduced precipitation, certain tree species have already started migrating to higher altitudes and latitudes over the past decade. For example, the North Macedonian pine, also known as Molika pine, has moved from a maximum latitude of 2,200 meters above sea level (m a.s.l.) on Mt. Pelister to higher latitudes of around 2,600 m a.s.l. A similar pattern is observed on abandoned pasturelands throughout North Macedonia, where pioneer plant species like juniper, which precede forest

tree species such as beech, have been identified. Climate change, along with the abandonment of pasturelands and reduced human presence, plays a significant role in driving these tree migrations.

Among European regions, the Mediterranean region is particularly vulnerable to global changes, primarily due to increasing temperatures and reduced precipitation. Potential impacts in this region include water shortages, a higher risk of forest fires, northward shifts in the distribution of typical tree species, and losses in agricultural potential. Mountainous areas are also susceptible to climate change, with anticipated changes in snow cover elevation and alterations in river runoff regimes.

In regions of Europe characterized by temperate forests, the climate conditions are characterized by annual mean temperatures ranging from below 17°C to above 6°C, with a cool winter period, and an annual precipitation of at least 500 mm. These forests are primarily dominated by broad-leaf species, with lesser amounts of evergreen broad-leaf and needle-leaf species. Some common tree species found in these forests include oaks, eucalypts, acacias, beeches, pines, and birches.

Human activities have significantly influenced these temperate forests, with factors such as land-use changes, landscape fragmentation, pollution, alterations in soil nutrients and chemistry, suppression of fires, changes in herbivore populations, species loss, the introduction of invasive species, and the ongoing impact of climate change.

In Western Europe, there has been an observed increase in forest productivity. This is believed to be a result of rising atmospheric CO<sub>2</sub> levels, anthropogenic nitrogen deposition, warmer temperatures, and longer growing seasons.

Climate change models indicate that the most significant threat to temperate forest ecosystems is a reduction in summer precipitation, leading to more frequent and severe droughts. This threat is particularly prominent in regions of temperate forests that are already prone to drought stress, such as southern Europe. Drought-stricken forests are also more susceptible to pests and wildfires, which can further exacerbate the impacts. Collectively, these interconnected effects have the potential to transform large areas of temperate forest ecosystems from carbon sinks to carbon sources, with significant implications for the global carbon cycle.

The proposed adaptation measures include:

- Restoring forests with local endemic oak species and other native varieties by implementing silvicultural and planning measures. This involves improving the species composition of forests, both natural and afforested, by introducing tree species that are resistant to the impacts of climate change.
- Implementing control measures to manage the dieback process in oak and other tree species. This includes conducting sanitary cuts to prevent the development of specific tree diseases and the proliferation of harmful pests.

- Strengthening preventive measures to improve forest management and minimize the risks of wildfires. This involves implementing practices and protocols that reduce the likelihood and severity of forest fires.
- Enhancing monitoring and observation efforts in the most vulnerable and economically valuable forests. By increasing surveillance and early detection systems, the occurrence and extent of damage caused by wildfires can be minimized.
- Afforesting approximately 150,000 hectares of barren land to increase the overall forest area by approximately 15%. This initiative aims to expand the forest cover and enhance ecosystem resilience.

To promote more sustainable forest management practices, it is recommended to move away from monocultures and embrace near-nature forest management, which involves diversifying species and age classes within forests. Natural or simulated natural regeneration methods are also encouraged to maintain genetic diversity and reduce vulnerability to climate change.

Additionally, it is suggested to improve fire detection and suppression techniques to better manage extreme disturbances. Implementing effective strategies to combat pests and diseases, such as stricter quarantine and sanitary management, can help minimize their impact on forests. Furthermore, establishing migration corridors between forest reserves can support the autonomous colonization and migration of species in response to changing climatic conditions.

### **3.2.7. Assumptions**

Forest fires can lead to various negative consequences, including:

- Human casualties and injuries, creating a sense of insecurity among the population. The loss of human life and physical harm caused by forest fires can have a profound impact on individuals and communities.
- Significant economic losses, both direct and indirect, resulting from the destruction caused by the fires. These losses can affect citizens' properties, as well as key sectors of the economy such as forestry, agriculture, and livestock. Additionally, forest fires can damage critical infrastructure such as electricity networks and telecommunication systems. The consequences also extend to the tourism industry, including forest recreation, as the affected areas may lose their appeal to visitors.
- Disruption of the ecological balance within the affected ecosystems. Forest fires can have long-lasting effects on the natural environment, causing damage to habitats and leading to the loss of biodiversity. The destruction of vegetation and alteration of ecosystems can disrupt ecological processes and impact the overall balance and functioning of the ecosystem.

In summary, the consequences of forest fires encompass not only human casualties and economic losses but also ecological disturbances that can have far-reaching effects on the natural environment.

### **3.2.8. Conditions**

The prerequisites for implementing the Emergency Management Framework (EMF) include:

- Clarifying the roles and responsibilities of all civil protection agencies involved in each specific action, based on the existing institutional framework. It is essential to establish a clear understanding of the tasks and duties assigned to each agency to ensure effective coordination during emergency situations.
- Reviewing, updating, and harmonizing the civil protection plans of the involved organizations in line with the EMF. This involves assessing and enhancing existing plans to align with the framework's guidelines and objectives. Additionally, developing or updating corresponding action memoranda to provide detailed instructions for each agency's response.
- Determining the available human resources and equipment at the Central, Regional, and Local levels that can be mobilized to address emergencies and manage the aftermath of forest fires. This step requires identifying and assessing the capacity of each entity to contribute to emergency response efforts.
- Ensuring the preparedness of all operationally involved entities at every stage of operations. This includes conducting training, drills, and exercises to enhance the readiness and competency of personnel in responding to forest fire emergencies. Regular evaluations and assessments should also be conducted to identify areas for improvement.
- Establishing effective communication channels among all participating entities to facilitate the seamless flow of information. This includes implementing communication protocols and systems that enable timely and accurate sharing of critical information during emergency situations.

In summary, the successful implementation of the EMF relies on clearly defined roles and responsibilities, updated plans and memoranda, available resources, preparedness of entities, and efficient communication among all involved agencies. These conditions ensure a coordinated and effective response to forest fire emergencies.

### **3.2.9. Design Parameters**

- The occurrence of extensive forest fire incidents simultaneously.
- "Large-scale forest fires" refer to fires that are not contained at their initial stage and due to their size, require the allocation of firefighting resources by all levels of administration.



### **3.2.10. Concept of Operations**

Within the framework of this plan, the following primary initiatives are undertaken:

- Enhanced preparedness measures in response to the imminent threat of forest fires.
- Providing support to the fire brigade in their efforts to suppress forest fires.
- Implementing actions to address emergencies and effectively manage the immediate and short-term consequences resulting from forest fires.

The fundamental principle guiding the implementation of the Emergency Management Framework (EMF) is not only the collaboration of all the involved Agencies but also their coordinated actions, as outlined by the existing institutional framework. The participating Agencies are activated during each phase of the Civil Protection Mobilization System, including standard readiness, heightened readiness, immediate mobilization-intervention, and recovery, based on the guidelines that follows.

### **3.2.11. Preparatory Actions (Normal Readiness – Phase 1)**

During this phase, various preparatory measures and actions are undertaken by all relevant organizations involved. These measures contribute to the readiness and preparedness for supporting the suppression of forest fire incidents, which are carried out under the responsibility of the Fire Brigade. Additionally, this phase includes addressing emergencies and managing their immediate and short-term consequences.

It should be noted that this plan specifically focuses on the actions and measures related to preparedness, response, and initial management of forest fire incidents. Preventive actions and projects, such as executing fire protection projects, implementing works in forests and forest lands, and vegetation removal around critical areas and infrastructures, are not within the scope of this plan and are not included in its provisions.

In the context of this plan, during this phase of the Civil Protection Mobilization System, the primary focus is on initiating preparatory actions and measures. These actions are aimed at ensuring readiness and effectiveness in dealing with forest fires and their consequences. The following activities are primarily undertaken:

- Reviewing, updating, and harmonizing the civil protection plans of the involved entities in accordance with this plan. This includes the development or revision of corresponding action memoranda.
- Developing training programs and exercises for personnel involved in civil protection actions specific to forest fires. These programs and exercises are designed, conducted, and evaluated based on the planning and guidelines established for civil protection.

- Securing the necessary financial resources for implementing the planned actions outlined in the entities' respective planning. This includes budgeting for the maintenance and operation of machinery and equipment, renting additional resources, hiring seasonal staff, and ensuring the availability of required materials.
- Monitoring and ensuring the proper operation of the communication system and information flow. This is crucial for secure exchange of information among the involved agencies, enabling effective decision-making.
- Ensuring the proper operation and maintenance of equipment and resources used for forest fire suppression and managing the immediate/short-term consequences of forest fires.
- Establishing memoranda of cooperation with private entities to acquire additional resources and strengthen efforts in dealing with emergencies and managing the consequences of forest fires. This also supports the work of the Fire Brigade in controlling and suppressing forest fires.
- Informing and raising awareness among citizens about preventive measures and self-protection strategies related to forest fire risks.
- Establishing and organizing damage registration committees to assess and provide financial aid to individuals in need as a result of forest fires.
- Convening the Local Coordinating Bodies (LCBs) of the Municipalities and the Regional Coordinating Bodies (RCB) of the Regional Units in preparation for addressing forest fire risks.
- Issuing decisions to implement measures such as vehicle traffic bans and restrictions on excursions in national forests, forests, and high-risk areas during dangerous times and days. These decisions take into account the specific circumstances within their respective areas of responsibility.
- Ensuring interconnection and cooperation among the Operations Centers of the relevant agencies at the central level.

It should be noted that these actions are focused on preparedness and coordination in the initial phase of the Civil Protection Mobilization System specifically related to forest fires.

### **3.2.12. Actions of increased preparedness in view of a threatened risk for the event of flood phenomena (Increased Preparedness - Phase 2)**

The increased preparedness of the participating organizations, based on the overall risk assessment and the Fire Risk Prediction Map, is primarily associated with the following actions:

- Enhancing surveillance efforts in forests and forested areas by collaborating organizations that support and cooperate in the implementation of operational plans for early detection of forest fires.

- Implementing preventive measures, such as banning vehicle traffic and excursionists in national parks, forests, and vulnerable areas. These measures are determined through relevant meetings of the Regional Coordinating Bodies (RCBs) of the Regional Units, with responsibility falling under competent Deputy Regional Governors.
- Informing the public through press releases about areas where the risk forecast indicates a high to an extreme level, with the aim of preventing negligent actions that could lead to fires.
- Taking precautions to prevent fires in areas where municipal waste is deposited without proper control or supervision.
- Implementing specific measures during military training exercises in accordance with circular orders issued by the military, to minimize the risk of accidental fires.
- Informing local farmers, breeders, and beekeepers about the high risk of fire through relevant announcements, to prevent any negligent actions during their work in rural areas.
- Ensuring the readiness of personnel and resources from participating organizations to provide direct support to the Fire Brigade in suppressing forest fires.
- Preparing personnel and resources from participating organizations, including local authorities, for an immediate response to emergencies and effective management of forest fires.

As mentioned earlier, in areas where there is a high risk of fires and the conditions in the next 24 hours are expected to be favorable for extreme fire behavior, the PDR (Protection and Rescue Directorate) has the authority to request additional prevention and preparedness measures from the relevant protection agencies involved in managing forest fires.

This course of action is considered necessary when the prevailing conditions, such as prolonged drought and high temperatures, along with the anticipated conditions in the following days, create a favorable environment for a significant number of fires. There is a concern that these fires may escalate and exhibit extreme behavior, either by spreading rapidly after the initial attack or by exhibiting intensified fire characteristics. In such situations, categorized as risk levels 4 and 5, special planning and coordination among the operational agencies are required to implement specific prevention and preparedness measures, taking into account personnel and resource allocation to effectively address these heightened risks.

### **3.2.13. Actions of increased preparedness in view of a threatened risk for the event of flood phenomena (Increased Preparedness - Phase 3)**

In the context of the EMF in this phase of the Mobilization System of Civil Protection in which the manifestation of the phenomenon is assumed, the handling of risks due to forest fires by the operationally involved bodies, focuses primarily on:

- Actions concerning the support of the work of the Fire Brigade for the control and suppression of forest fire with the support of the other operationally involved civil protection bodies.
- Actions related to dealing with emergencies due to forest fires and the management of their consequences, as well as their immediate/short restoration, by civil protection agencies.

The control and suppression of forest fires is the responsibility of the Fire Brigade and it acts in accordance with the provisions of its operational plan. Fire Brigade may also be supported by other civil protection bodies. The assistance of the other operationally involved entities in the work of the Fire Brigade is carried out at the relevant request of the head officer of the suppression operations and is mainly focused on the following actions:

- Provision of water vehicles, construction machinery, etc. by other civil protection entities in support of the work of suppression by the
- Police taking traffic measures to facilitate the movement of firefighting vehicles and vehicles of other agencies.
- Preventive interruption of electricity supply for the safety of forest fire suppression personnel.
- Provision of military personnel and means to support the fire suppression.
- Sending ambulances to the scene of the fire, to deal with any health incidents.
- The means of the organizations which are available for the control and suppression of forest fires (water tankers, machines, etc.), are included operationally under the Fire Brigade head officer of suppression operations, who has also the responsibility of utilizing them at the local level.

In the context of the Emergency Mobilization Framework (EMF) and this phase of the Civil Protection Mobilization System, where the manifestation of forest fire risks is assumed, the operational bodies involved primarily focus on addressing these risks. Their main areas of concentration involve:

- Taking actions to support the Fire Brigade in controlling and suppressing forest fires, with assistance from other operationally involved civil protection bodies.
- Undertaking measures to handle emergencies caused by forest fires and manage their consequences, including immediate or short-term restoration, by civil protection agencies.

The responsibility for controlling and suppressing forest fires lies with the Fire Brigade, which operates according to its established operational plan. The Fire Brigade can also receive support from other civil protection bodies. The assistance provided by these entities, in coordination with the Fire Brigade, is requested by the head officer in charge of suppression operations and mainly focuses on the following actions:

- Other civil protection entities offering water vehicles, construction machinery, and related resources to support fire suppression efforts.
- The police implementing traffic measures to facilitate the movement of firefighting vehicles and vehicles from other agencies.
- Preemptively interrupting electricity supply to ensure the safety of personnel engaged in forest fire suppression.
- Deploying military personnel and resources to support fire suppression operations.
- Dispatching ambulances to the fire site to address any health incidents that may arise.

The operational assets required for controlling and suppressing forest fires, such as water tankers and machinery, are operationally managed under the authority of the head officer responsible for the Fire Brigade's suppression operations. This individual also holds the responsibility for efficiently utilizing these assets at the local level.

Dealing with emergencies and managing the immediate consequences of forest fires, by the operationally involved agencies, primarily focuses on the following actions:

- The Fire Brigade is responsible for evacuating and rescuing citizens who are in immediate and continuous danger within the burning area, ensuring their safety and preventing casualties.
- Implementing organized evacuations of citizens as a preventive measure for their protection, initiated in a timely manner during the ongoing disaster. The assessment of evacuation conditions and limitations is conducted at the local level and falls under the responsibility of competent Civil Protection Bodies such as mayors and deputy regional governors.
- Taking protective measures at institutions such as nursing homes, children's camps, monasteries, archaeological sites, hotels, and military and security installations located in or near forests and forest areas. These measures align with fire protection and evacuation plans to ensure preparedness during emergencies.
- Implementing traffic measures to prevent congestion and redirect traffic away from affected areas, avoiding potential entrapment in the fire zone. These measures also facilitate the movement of citizens away from the affected areas.
- Addressing health incidents resulting from citizens' exposure to combustion products or injuries during the catastrophic event.
- Providing immediate administrative care and assistance to the affected individuals under the responsibility of mayors, with support from other bodies such as regional authorities and the armed forces, as necessary.

- Collaborating with the police to implement order and security measures in coordination with the Fire Brigade, ensuring the protection of life and property for citizens within the affected area.
- Promptly restoring the operation of essential services, including power supply networks, that have been damaged or disrupted due to the catastrophic event.
- Mobilizing the armed forces to contribute personnel, resources, materials, and supplies to the affected areas, assisting in emergency response efforts.
- Informing the public about the occurrence of forest fires and providing updates on fire suppression operations.
- Communicating civil protection actions aimed at addressing emergencies caused by forest fires, providing instructions to minimize the consequences and protect public health. These instructions are in accordance with circulars or relevant guidelines issued by the General Directorate of Public Health & Quality of Life of the Ministry of Health.

#### **3.2.14. Immediate relief actions for those affected and immediate/short recovery of the consequences of the disaster (Recovery / Relief– Phase 4)**

During this phase, additional relief measures are initiated for those affected, including conducting damage assessments and making decisions for immediate or short-term recovery from the disasters. Within the framework of this Emergency Mobilization Phase of the Civil Protection System, the following actions are addressed:

- Providing administrative care for individuals who have been displaced from their residences or places of residence due to documented risks arising from the development of forest fires.
- Offering financial assistance to affected individuals to meet their basic needs and replace household items, among other necessary support.
- Demarcating areas affected by the fires and providing housing assistance, with assessments of damage to businesses conducted by the regional authorities and damage to homes carried out by the municipal authorities.
- Granting financial aid to industrial and artisanal units, shops, agricultural holdings, other businesses, and nonprofit organizations that have been impacted by forest fires.
- Registering and safeguarding the burned forest areas under the jurisdiction of the local forestry services.

- Documenting and compensating for the damage to the animal and plant populations caused by the fires.
- Restoring damaged infrastructure and networks through the efforts of the relevant operation and maintenance bodies.
- Undertaking the necessary repairs to the road network, managed by technical works departments and other relevant entities responsible for the maintenance of roads.

Overall, in this phase, the focus is on providing assistance, conducting assessments, and taking measures to support the affected individuals, businesses, and ecosystems, while also restoring critical infrastructure and networks to facilitate recovery from the consequences of forest fires.

### **3.3. Technological Accident Emergency Management Framework**

#### **3.3.1. Introduction**

The occurrence of major accidents involving dangerous chemicals poses a significant threat to human lives and the environment. Not only do these accidents have the potential to cause immense harm, but they also lead to substantial economic losses and disrupt sustainable growth. However, in certain industry sectors that are essential for a modern industrialized society, the use of large quantities of hazardous chemicals is unavoidable. To mitigate the associated risks and ensure the safety of communities and ecosystems, it is crucial to implement measures that prevent major accidents and establish effective preparedness and response mechanisms in the event that accidents do occur.

In 2012, the Seveso-III Directive (Directive 2012/18/EU) was introduced, taking into consideration various factors, including changes in Union legislation related to chemical classification and the increased rights of citizens to access information and seek legal recourse. The directive applies to more than 12,000 industrial establishments across the European Union that handle or store significant amounts of dangerous substances, with a particular focus on the chemical and petrochemical industry, as well as the fuel wholesale and storage sectors, including LPG and LNG. Its primary objective is to regulate and control major accident hazards associated with dangerous substances, particularly chemicals, thereby contributing to the reduction of risks posed by technological disasters.

Given the extensive industrialization within the European Union, the Seveso Directive has played a crucial role in achieving a commendably low frequency of major accidents. It has become widely recognized as a benchmark for industrial accident policy and has served as a model for legislation in numerous countries worldwide. The implementation of this directive has significantly enhanced safety standards and ensured the protection of human lives and the environment in industrial settings.

Through the Seveso-III Directive, comprehensive measures are in place to prevent and manage major accidents involving dangerous chemicals. This includes strict regulations on the handling, storage, and transportation of hazardous substances, as well as requirements for risk assessment and emergency planning. The directive also emphasizes the importance of public access to information regarding the

presence of hazardous substances and the rights of citizens to seek legal remedies in the event of accidents or environmental damage.

Furthermore, the Seveso Directive promotes a culture of continuous improvement in industrial safety by encouraging the exchange of best practices, fostering technological advancements, and facilitating cooperation between stakeholders, including industry operators, regulatory bodies, and local communities. By effectively addressing the risks associated with dangerous chemicals, the directive contributes to the overall resilience and sustainability of the industrial sector, ensuring a safer environment for workers, nearby residents, and the ecological systems that may be affected by such activities.

North Macedonia has experienced disasters caused by the technological hazards.

Disaster	Domain	Year	No killed
Transport accident (air)	Air	1993	115
Transport accident (air)	Air	1993	83
Transport accident	Road	2001	10
Transport accident	Water	2009	15
Transport accident	Rail	2015	14

### 3.3.2. Instructions for the activation and implementation of the Plan

The Emergency Management Framework (EMF) is triggered and applied in the event of an unexpected incident involving leakage, fire, or explosion within a SEVESO facility. These incidents occur due to accidental factors during the facility's operations, unrelated to its contractual obligations. The EMF is automatically activated as soon as the relevant Fire Brigade receives notification of the incident from any public or private entity, not solely from the operator, after confirming the call. Importantly, the implementation of the EMF does not require the declaration of one or more areas as being in a state of civil protection emergency.

Therefore, the activation and implementation of the EMF do not depend on issuing a relevant decision declaring the affected area as being in a state of emergency. Decentralized Civil Protection Bodies, such as the Mayor or Regional Governor, do not need to make specific decisions in this regard, even after receiving a proposal from the Coordinating Bodies of Civil Protection. Additionally, it is the responsibility of the operators to record any relevant accidents or "near misses."

**The EMF is applied in the event of an incident or major accident occurring within a lower level facility.** Similar procedures are also followed in such cases.

This plan is also activated and applied when a major accident occurs during the loading and unloading of tanker vehicles or trains within SEVESO facilities. Moreover, it is relevant for accidents or incidents during the transportation of dangerous goods by road or rail outside the facilities.



The plan is also activated if there is an established or suspected occurrence of a major accident resulting from a terrorist act, excluding the involvement of chemical warfare agents. Chemical warfare agents, which are substances intended to cause death, serious injury, or harm to groups of people through their chemical properties (as defined by NATO's "Handbook on medical aspects of NBC defensive operations" from 1996), are covered under the Special Plan for the Management of CBRN Consequences. In such cases, activating the latter plan becomes imperative. The levels of preparedness, specific actions of the involved agencies, and additional preparedness measures are determined through their planning processes and the general risk assessment at the local level.

The mobilization of Fire Brigade services for incident control and suppression is determined by the competent bodies of the Fire Brigade based on their operational planning. During operations to control and suppress incidents or accidents at SEVESO facilities, the competent bodies of the Fire Brigade coordinate the operations according to their operational plan.

The mobilization of other entities involved in providing support to enhance suppression efforts is determined by their respective competent administrative bodies, following relevant requests from the Fire Brigade.

It is essential to clarify that these agencies operate under a special institutional framework and regulations. The mobilization and deployment of forces in fulfilling their mission are determined by their operational planning and the decisions made by their physical leadership. These decisions are independent of any decision to characterize an area as being in a state of civil protection emergency.

The same principle applies to the health sector, which mobilizes to provide assistance based on its planning, regardless of decisions to characterize a disaster or declare an area in a state of civil protection emergency.

The coordination of civil protection actions required to address emergencies and effectively manage the immediate consequences of a major accident is the responsibility of the competent Civil Protection Organ, depending on the escalation of the incident. "Coordination" refers to organizing and maintaining cooperation among various units within services, agencies, and administrative structures, as well as between different entities involved in civil protection. This ensures unified and synchronized action in prevention, preparedness, response, and disaster recovery.

The coordination of civil protection actions necessary to address emergencies and effectively manage the immediate and short-term consequences resulting from a major accident is the responsibility of the competent Civil Protection Organ, which varies depending on the escalation of the incident. The term "coordination" refers to the organization and maintenance of cooperation among various organic units, services, agencies, and administration structures involved in civil protection. This collaboration ensures unified and synchronized actions in terms of prevention, preparedness, response, and disaster recovery.

It is important to emphasize that the institutional framework serves as the foundation for implementing a series of actions that may vary for each incident, depending on the management requirements of the catastrophic event and the entities involved. These actions are not limited in scope and can support the task of incident suppression, which falls under the responsibility of the Fire Brigade, as well as addressing

emergencies and managing the immediate and brief consequences of such incidents. The organizational structure, operational framework, and regulatory acts of the administration dictate the roles, responsibilities, and main actions of the entities involved in dealing with risks arising from incidents or accidents involving facilities handling dangerous substances.

### **3.3.3. Purpose**

The purpose of implementing the EMF is to ensure an immediate and coordinated response from the relevant agencies at all levels of administration, including central, regional, and local authorities. The primary objectives of this response are:

- Providing assistance to the Fire Brigade in controlling and suppressing incidents or major accidents occurring within SEVESO facilities, as governed by KYA 172058/2016 regulations.
- Facilitating an effective response to emergencies and the swift management of consequences resulting from a major accident, known as TAME (Timely Actions for Managing Emergencies).

These actions are aimed at safeguarding the lives, health, and property of citizens, as well as protecting the natural environment, valuable resources, and infrastructure of the country.

To achieve this objective, it is crucial to foster synergy, cooperation, and interoperability among the involved agencies at all levels of administration.

### **3.3.4. Objectives**

The objectives of this section of EMS are as follows:

- Clearly defining the roles and responsibilities of all participating agencies at each level of administration (central, regional, local) during all stages of the Civil Protection system's mobilization.
- Ensuring coordinated efforts among all civil protection agencies involved, in accordance with their respective institutional frameworks, to provide support in suppressing incidents or major accidents, which falls under the jurisdiction of the Fire Brigade.
- Facilitating coordinated actions of all civil protection agencies involved, based on their institutional frameworks, to effectively address emergencies and manage the immediate or short-term consequences of an event. The ultimate objective is to restore normal operations in areas that have been affected and declared in a state of emergency.

### **3.3.5. Risk Analysis**

The risk analysis conducted for SEVESO facilities involves capturing specific points of interest using coordinates. These include:

- Locations with a significant concentration of population, such as military installations, other establishments that may or may not fall under the scope of KYA 172058/2016, churches, and more.
- Meeting places frequented by vulnerable sections of the population, including schools, hospitals, camps, and similar sites.
- Settlements in proximity to the facilities, specifically:
  - For higher-level installations, within a radius equivalent to that of zone III-Protection Population, which considers the worst-case scenario.
  - For lower-tier facilities, within a radius of 1km from the center of the facility.

It is particularly important to record the coordinates of the SEVESO facility that is closest to any populated area.

### **3.3.6. Concept of Operations**

The establishment of incident protection zones by the Head Officer at the scene is a necessary requirement in any incident involving hazardous substances. It is important to note that throughout the course of the incident, the determination of these zones is regularly reassessed by the Head Officer in collaboration with the facility's security technician. The adjustments are made considering the current meteorological conditions.

Furthermore, it should be emphasized that no operator is permitted to enter zones I, II, or III unless they possess the necessary authorization, appropriate protective equipment, and relevant training. The safety of the operator must also be ensured by the competent Head Officer of the Fire Brigade at the incident, who is responsible for coordinating the operations.

### **3.3.7. Memoranda of Actions**

It is necessary for Regions and Municipalities within the jurisdiction of higher-level SEVESO facilities, under the responsibility of various Ministries and Agencies, to develop Memoranda of Actions as part of the Emergency Management Framework (EMF). These memoranda outline the actions to be taken by the involved bodies in the event of an accident.

The action memorandum is a straightforward and non-confidential document that addresses five critical questions: who, what, when, where, and why. At the Municipality and Region level, the memorandum should include the following:

- Identification of individuals responsible for implementing Civil Protection actions at the Municipality and Region levels, including their deputies. This includes their contact information such as name, title, position, capacity/specialty, telephone numbers, and fax numbers.
- List of operational resources available directly to the organization (Municipality, Region) for implementing Civil Protection actions related to risk management and immediate/short-term management. These resources may include project machinery, firefighting equipment, personnel transport vehicles, collaborating laboratories, and more.

Additionally, action memoranda should be developed by other organizational units within the Municipalities and Regions involved in civil protection actions. These memoranda focus on the immediate mobilization to address emergencies and manage the consequences of an event.

Lastly, all parties responsible for operating infrastructures that are at risk in the event of an accident (e.g., public transport service providers, water and power supply operators, road network operators, school and hospital administrators, etc.) should also prepare action memoranda.

### **3.3.8. Operational Actions**

The operator of the facility is responsible for making the initial notification of the incident. If there is no operator present (e.g., bankrupt company, abandoned facility), anyone who detects the incident can make the call. Upon receiving the notification, the Fire Brigade immediately informs the Regional Civil Protection Directorate (PDR), followed by the Municipality and the Region.

The person in charge of the facility must grant full access to the Fire Brigade and promptly activate the facility's internal emergency plan. The Fire Brigade holds the responsibility and operational planning for suppressing incidents/major accidents and providing assistance in rescuing individuals and protecting civilian lives at risk. In this regard, the competent Fire Brigade carries out the following actions:

- Collaborates with the facility's security technician to establish the protection zones for suppression groups and the population.
- Assesses the incident in cooperation with the facility's security technician based on immediate indications such as intensity, extent, presence of injured or deceased individuals, points of interest within population protection zones, prevailing and predicted meteorological conditions, and potential consequences. The incident is classified as either an "incident" or a "major accident." If there are no measurements available for gaseous pollutants or other necessary assessments, the Head Officer at the scene can request the mobilization of agencies and resources authorized to conduct sampling and measurements in soil, air, and water through the PDR, Municipality, or Region.
- Takes appropriate action and provides instructions to manage incidents involving hazardous materials, if required.

If there is no security technician present at the facility (e.g., incident in a non-operational facility with dangerous materials left inside or unlocked equipment), the Head Officer at the scene assesses the incident and establishes the area boundaries based on the operational planning of the Fire Brigade. In the case of higher-level facilities, the Head Officer may also refer to information provided in the facility's Special Emergency Management System (EMS), if available.

Other bodies, such as Regions, Municipalities, and Police, as mandated by the institutional framework, participate under the command of the Fire Brigade Head Officer in coordinating suppression efforts. They allocate their own resources (personnel and equipment) accordingly.

It is emphasized that no one should enter zones I, II, or III without proper authority, appropriate protective equipment, adequate training, and the assurance of safety from the competent Head Officer at the incident.

### **3.3.9. Supportive Actions**

The primary focus of the Fire Brigade's operations for incident control and suppression involves the following actions:

- Upon the request of the Head Officer at the incident scene, the Municipality, neighboring Municipalities, or the relevant Region may provide support by supplying work machinery, tankers, pumps, water trucks, absorbent materials, and other necessary equipment.
- If any hazardous liquids escape from the facility and contaminate the nearby road network, the facility operator is responsible for addressing the situation and potentially assisting in the maintenance of the road network.
- The Police/Port Authorities implement traffic measures to facilitate the movement of firefighting vehicles and other vehicles involved in the suppression efforts.
- The Power Supplier may proactively interrupt the electricity supply, as requested by the Head Officer, to ensure the safety of personnel working at the incident site.
- Ambulances and mobile medical units may be dispatched to the incident scene to provide healthcare assistance to the operating personnel in case of health-related incidents.

It should be noted that these actions are aimed at supporting the Fire Brigade's operations and ensuring the safety and effective management of the incident.

### **3.3.10. Escalation of Operation**

The coordination of actions among the various agencies involved in addressing emergencies and managing the immediate/short-term consequences of the incident is carried out by the competent Civil Protection Body. This body could be the Mayor, Regional Governor or competent Deputy Regional Governor, Secretary General of Civil Protection, or Coordinator of Decentralized Administration,

depending on their assigned roles by the General Secretary of Civil Protection. The coordination depends on the severity and escalation of the incident.

The level of escalation and mobilization of personnel and resources may be adjusted as necessary based on the latest evaluation of data regarding the impact of the catastrophic event. The criteria for escalation are as follows:

- Insufficient available resources at the lower administrative level to effectively handle the disaster.
- The extent of the disaster, including its size and scope.
- The extent of loss or damage caused by the disaster (intensity of the event).

It is important to note that the escalation of mobilization for each agency should not be confused with the broader escalation of mobilization for the entire Civil Protection Mechanism. Each agency's escalation may occur at different times based on the specific circumstances and requirements of the situation.

### **3.3.11. End of Operation**

Once the incident has been successfully suppressed and the necessary actions to restore the affected area to its previous state have been completed (such as environmental clean-up, removal of temporary markings, resumption of traffic, etc.), the incident is considered to have ended. At this stage, a full de-escalation of resources and capabilities that were mobilized to address the incident takes place. The agency responsible for coordinating resource allocation gives the order to end the incident.

It is important to note that the conclusion of the incident also signifies the discontinuation of the delineation of protection zones (I, II, and III) in the incident area. This occurs when the following conditions have been met:

- The incident has been completely suppressed, meaning that it is under control and no longer poses a threat.
- There is no risk to the health and safety of citizens, such as the presence of emitted toxic pollutants.
- All necessary short-term consolidation and rehabilitation actions have been carried out at the site of the incident.

After the incident has been suppressed and the area has been fully sanitized and rehabilitated, the immediate danger related to the incident's consequences on the life, health, and property of citizens, as well as on material and cultural assets, and the country's infrastructure and wealth-producing sources, is eliminated. This includes risks associated with fires, explosions, and the dispersion of toxic substances. However, it should be noted that certain ongoing actions, such as sampling and measurements, informing the population, and repairing damage to public utility networks, may still be necessary.

It is not a requirement for the facility where the incident occurred to have returned to normal operation in order to declare an end to the incident, unless it is an infrastructure of significant economic, social, or political importance to the region, broader area, or the country.

The de-escalation of the involved entities, responsible for supporting the suppression work led by the Fire Brigade, is determined by the Head Officer of the Fire Brigade, who acts as the incident coordinator. Once the de-escalation decision is made, emergency services and other external agencies that provided assistance can leave the incident scene. Each agency involved in civil protection actions is responsible for scaling down their human resources and equipment accordingly.

After the incident has ended and if a case file is opened, a preliminary investigation is conducted. In cases of fires or explosions resulting from fires (e.g., BLEVE type explosions, vapor cloud explosions), the investigation is assigned to the competent Fire Brigade.

Furthermore, in the event of an incident, the licensing authority coordinates relevant authorities within their respective jurisdictions to:

- Gather necessary information through inspections, surveys, or other means to thoroughly analyze the technical, organizational, and management aspects of the accident.
- Take appropriate actions to ensure that the operator has implemented the required corrective measures.
- Formulate recommendations for future preventive measures.

## **4. Conclusions and recommendations**

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The identified and presented Emergency Management Frameworks (EMFs) serve as a crucial and widely accepted foundation for developing emergency operational strategies. These frameworks outline the roles and responsibilities of various stakeholders involved in managing incidents. By establishing a common understanding and approach, the EMFs provide a solid starting point for effective and coordinated emergency response efforts.

This deliverable represents a significant milestone in the project, offering a comprehensive overview of activities aimed at assessing the project's impact on the target communities. The successful collaboration among all project partners has been instrumental in gathering the necessary insights and expertise to create this valuable resource.

The MAGMA team, with their extensive experience and expertise, has contributed invaluable data and knowledge from past incidents that relate to the areas covered by the EMFs. This empirical information has been carefully systematized and structured into a concise, straightforward, and user-friendly document. The team's dedication and attention to detail ensure that all important elements are captured, providing a comprehensive understanding of emergency management strategies.

Furthermore, in close collaboration with the project team from LB, the document is being further enriched with additional data specific to Greek EMFs. This expansion aims to broaden the document's relevance and applicability, considering the need for cross-border actions and procedures. It is widely recognized that emergencies do not respect national boundaries, and effective collaboration is vital for proactive prevention, robust mitigation measures, and efficient response efforts.

As the project progresses, it is strongly recommended to continue gathering as much data as possible, incorporating insights from diverse disciplines. This will ensure that the document remains comprehensive and up-to-date, encompassing all relevant areas, emerging issues, and important considerations. By integrating multidisciplinary perspectives, the document will provide a holistic understanding of emergency management, empowering stakeholders to make informed decisions and take effective actions.

In conclusion, this deliverable represents a significant achievement in the project, serving as a valuable resource for emergency management practitioners and decision-makers. The collaborative efforts of all project partners have enabled the creation of a comprehensive and user-friendly document that will enhance emergency response capabilities and contribute to the overall resilience of the communities involved.



## References

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1. "Emergency Management Definition, Vision, Missions, Principles". training.fema.gov.
2. Quarantelli, Enrico (2000). "Emergencies, disasters and catastrophes are different phenomena".
3. "CDC – Hazard Based Guidelines: Protective Equipment for Workers in Hurricane Flood Response – NIOSH Workplace Safety and Health Topic". www.cdc.gov. September 13, 2017.
4. "Earthquake Preparedness and Response". Occupational Safety and Health Administration. United States Department of Labor.
5. "Emergency action plans. - 1910.38 | Occupational Safety and Health Administration". December 1, 2017. Archived from the original on December 1, 2017.
6. "Mission Areas". Federal Emergency Management Agency. United States Department of Homeland Security. Archived from the original on January 3, 2020.
7. Joint Economic Committee (2017). The Need to Rebuild Smarter (Report). p. 5.
8. "13 Tex. Admin. Code § 7.164 - Required Minimum Storage Conditions for Permanent Records". LII / Legal Information Institute.