

Comprehensive Risk Assessment of Basic Services and Transport Infrastructure

101004830 - CRISIS - UCPM-2020-PP-AG

**Needs assessment, bottleneck analyses and review of EU and
regional legislative and research related to risk assessment
and disaster management**

Review of existing standards, procedures and guidelines

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1. Review of current legislation and various documents on disaster risk assessment and management

1.1 National perspective

1.1.1. North Macedonia

Prevention and disaster management in the Republic of North Macedonia takes place on several levels. It is organized and implemented by the government, state administration bodies, local self-government units, public enterprises, public institutions and services, companies, citizens' associations, particularly:

- Crisis Management Center (CMC),
- Protection and Rescue Directorate (PRD),
- Ministry of Internal Affairs,
- Ministry of Defense,
- Ministry of Agriculture, Forestry and Water economy,
- Ministry of Environment and Physical Planning
- Ministry of Health,
- Ministry of Transport and Communications,
- Ministry of Labor and Social Affairs,
- Ministry of Education and Science,
- Ministry of Local Self-Government,
- Ministry of Economy,
- Local self-government units,
- Territorial firefighting units,
- Radiation Safety Directorate,
- Institute of Public Health,
- Food and Veterinary Agency,
- Commodity Reserves Agency,
- Hydrometeorological Administration,
- The Association of Local Self-Government (ZELS),
- Institutes, Universities,
- The non-governmental sector,
- The Red Cross of the Republic of Macedonia,
- The private sector and others, as up to the personal and collective protection.

Beside the Constitution of North Macedonia, the legal framework for prevention and disaster management in the republic, consists of two groups of laws and regulations: laws and regulations that directly regulate this area, (like Law on Crisis Management and the Law on Protection and Rescue), and laws and regulations that indirectly locate responsibilities and describe appropriate actions. All relevant legislation is published in the official gazette. Table 1.1 summarizes the legislation describing competences of the institutions and other subjects in the disaster risk assessment and management at national and local level.

Table 1.1 Competences as defined in legislation

National level	Constitution of North Macedonia; Law on Crisis Management; Law on Protection and Rescue; Law on Fire-Protection; Law on Spatial and Urban Planning; Law for Construction; and Law for the Transportation of Hazardous Materials in Road and Railway Traffic.
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Ministerial level	Ministerial level consists of internal regulations that are numerous in every government body.
Inter-ministerial coordination	Law on Crisis Management; National Protection and Rescue Strategy; Strategy of National Security; and National Security and Defense Concept.
Local level	Law on Crisis Management; and Law on Local Self-government.
Private sector	Law on Crisis Management; The Law on Protection and Rescue and related supporting legislation, which define in detail the rights and obligations of individual protection and rescue participants; The North Macedonia Threat Assessment; and The Plan for Protection and Rescue of the Republic of Macedonia.
Volunteers	Law on Crisis Management; The Law on Protection and Rescue, supporting legislation governing the rights and obligations of volunteers in the area of protection and rescue; and Agreements on protection and rescue cooperation between PRD and volunteer associations.
NGO's	Law on Crisis Management; Law on the Macedonian Red Cross; Law on Macedonian Mountain Rescue Service.
International level	International intervention is governed by political agreements.

1.1.1.1. Law on Crisis Management

With the Law on Crisis Management in the Republic of North Macedonia the system of functioning with crises is determined for the purpose of: prevention, early warning and management of crises that pose a risk to the good, health and life of humans and animals, which resulted from natural disasters and epidemics or other risks and dangers that directly affect and endanger the constitutional order and security of the Republic North Macedonia, or part of it, and for which there are no conditions for declaring martial law or state of emergency.

The Law on Crisis Management defines the term "crisis", as an occurrence that endangers the fundamental values, long-term and vital interests and goals of the country, jeopardizing the constitutional order and security of Republic North Macedonia; while "crisis situation" is defined as a condition that endangers the goods, health and lives of people and animals and the security of the republic, for which prevention and / or management, wider range of resources is required.

Crisis management system is performed by the state administration bodies and state authorities, armed forces such as the Army of Republic of North Macedonia, the protection and rescue forces and the bodies of the municipalities, as well as public enterprises, public institutions and services and companies.

Additionally, citizens, citizens' associations and the Red Cross of Republic of North Macedonia, non-governmental and humanitarian organizations, the media and other legal entities can take part in prevention, early warning and coping with crises, voluntarily and contractually, on the basis of law and other ratified international treaties governing this matter.

Also, by this law, international organizations, institutions and individuals have the right to participate in the prevention of disaster in accordance with an international agreement to which the republic acceded or ratified it.

In order to provide for the effective and efficient operation of the crisis management system, its operational structure at regional level has established 8 main regional crisis management centres (MRCMC): 1. MRCMC HQ Skopje, responsible for the northern region, 2. MRCMC Kumanovo, responsible for the north-east region, 3. MRCMC Tetovo, responsible for the north-west region, 4. MRCMC Ohrid, responsible for the south-west region, 5. MRCMC Bitola, responsible for the southern region, 6. MRCMC Veles, responsible for the central region (Vardar region), 7. MRCMC Strumica, responsible for the south-east region, and 8. MRCMC Shtip, responsible for the eastern region. These centres operate 24 hours per day, 7 days in the week. The duty officer services within these centres can be reached by dialling, free of charge, the unique emergency number 195, which is in phase to be replaced by the universal European emergency number E-112. The local coverage of the remaining local self-government units (up to their total number of 84) is by individually appointed persons from the relevant regional crisis management centres, in accordance with the territorial setup of the system. The regional centres establish Regional Headquarters, as the operational and professional bodies which are managed by the Head of the Regional Centre. The regional headquarters within the regional centres shall be composed of representatives from the regional units of the ministries and other public administration bodies that take part in the Steering Committee, as well as of one representative from each municipality and from the City of Skopje, the territories of which are covered by the Regional Centre. The regional headquarters shall become operational by a decision of the Director of the Centre. The full organizational and institutional setup of the bodies and authorities within the Crisis Management System of the Republic of Macedonia is presented on the following figure:

The full organizational and institutional setup of the bodies and authorities within the Crisis Management System of the Republic of Macedonia is presented on the following chart:

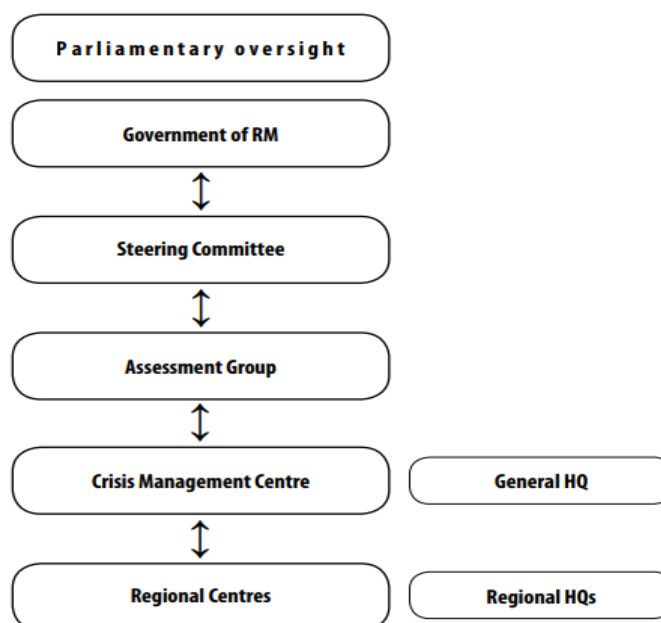


Fig 1.1 Organizational setup of the authorities and bodies within the Crisis Management System of the Republic of North Macedonia

1.1.1.2. Law on Protection and Rescue

This law regulates the system for protection and rescue of people, environment, material goods, natural treasures, fauna and flora and a legacy of natural disasters and other disasters in peace, extraordinary state and military situation in the Republic of North Macedonia. According to this law, the protection and rescue system is realized 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.

Within this law, an interlinked system of planning, financing, coordination, mitigation of consequences, preparedness and response to natural and technological hazards is described. Also, division of the responsibilities between the participants in protection and rescue activities, including the state, local authorities, private companies, and public enterprises, facilities and services, is introduced. The law regulates the division of responsibilities in accordance with the provisions in the Local Self-government Law, which further gives responsibilities and obligations for protection and rescue to the municipalities. All of these documents include acts that define the responsibilities of the government authorities in case of emergency, as well as legislation dealing with specific issues (such as technical IT security). Legislation in the area of disaster risk reduction includes a large number of laws and bylaws that describe the activities and competencies of the institutions and other subjects at national and local level.

The Law on Protection and Rescue performs via following documents:

- The National Strategy for Rescue and Protection – adopted by the Parliament every five years;
- The National Threat Assessment – adopted by the government; and
- The National Plan for Rescue and Protection from Natural and Other Accidents – adopted by the government.

1.1.1.3. Law on Defense

When it comes to prevention and protection from natural and others disasters, the Law on Defense, in Articles 11 and 12 determines the role of citizens in relation to civil protection.

The article 11 emphasizes that the duty of citizens to participate in civil protection consists of performing tasks in protection and rescuing the population and material goods from the military destruction, the consequences caused by them and other dangers in a state of war, as well as from natural disasters, epidemics, technical-technological hazards and other accidents in state of peace. The article 12 defines which groups of citizens have the right to actively participate in civil society protection.

1.1.1.4. Law on Firefighting

By this law firefighting units are formed, whose main activity is rescue citizens' lives and protection of property endangered by fires and explosions, providing technical assistance in case of accidents and dangerous situations, as well as performing other activities in case of accidents and disasters. Except for regular firefighters, for extinguishing fires in forests and other open spaces, in conditions of increased danger of occurrence of such fires, the law provides legal basis for hiring seasonal firefighters operating in as a part of firefighting units.

1.1.1.5. Organizational structure of protection and rescue forces

General organization of protection and rescue forces in North Macedonia consists of two pillars (Fig.1.2, Fig.1.3):

- Republic Forces
These forces are formed by the Republic of N. Macedonia, aiming to act in the following Municipalities: Berovo, Bitola, Valandovo, Veles, Vinica, Gevgelija, Gostivar, Debar, Delcevo, Demir Hisar, Kavadarci, Kicevo, Kochani, Kratovo, KrivaPalanka, Krushevo, Kumanovo, MakedonskiBrod, Negotino, Ohrid, Prilep, Probishtip, Radovich, Resen, Sveti Nikole, Struga, Strumica, Tetovo, Shtip and the city of Skopje.
- Spatial Forces
These forces are formed by the units of local self-government, companies, public enterprises, institutions, and services aiming to act in the areas of the Municipalities.

Main organizational units of protection and rescue forces consist of: 1) Specialized Units; 2) Universal Units; and, 3) Rapid Response Teams. Detailed compositions of those organizational units are presented in Table 1.2.

When natural and other disaster strikes, the protection and rescue forces act as a single (unique) protection and rescue system following strictly prescribed coordination scheme (Fig. 1.4). Spatial forces for protection and rescue which are part of the companies, public enterprises, institutions, and services are used by the body that establishes them. The spatial forces for protection and rescue are used by the municipality in which they were created. In conditions when the consequences cannot be removed/managed by those forces, at the request of the mayor of the municipality in which disaster occurred and followed by the approval of the Director of PRD, the Republic forces for protection and rescue can be used. They can also be used to provide assistance abroad.

Table.1.2. Organizational units of protection and rescue forces

	Specialized Units	Universal Units	Rapid Response Teams
Republic Forces	<ul style="list-style-type: none"> ○first aid ○care for the affected and endangered population ○radiological, chemical, and biological decontamination ○rescue from rubble ○reconnaissance ○clearing rubble ○rescue from tall buildings ○flood protection and rescue ○fire protection and rescue ○protection from unexploded ordnance and explosives ○protection and rescue of animals and products from animal origin ○protection and rescue of plants and products from plant origin ○logistical support ○field rehabilitation 	/	<ul style="list-style-type: none"> ○first aid ○fire protection and rescue ○flood protection and rescue ○underwater protection and rescue ○protection and rescue from chemical accidents ○protection from unexploded ordnance and explosives ○rescue from rubble ○rescue from tall buildings ○mountain rescue ○rescue from mining accidents ○care for endangered and affected population
Spatial Forces	<ul style="list-style-type: none"> ○first aid ○fire protection ○flood rescue ○radiological, chemical and biological decontamination ○communal works ○protection and rescue of animals and products from animal origin ○protection and rescue of plants and products from plant origin ○field reconnaissance ○field rehabilitation 	<ul style="list-style-type: none"> ○first aid ○extinguishing minor and initial fires ○rescuing endangered and trapped people in shallow ruins ○participation in shelter ○evacuation and care of the population 	/

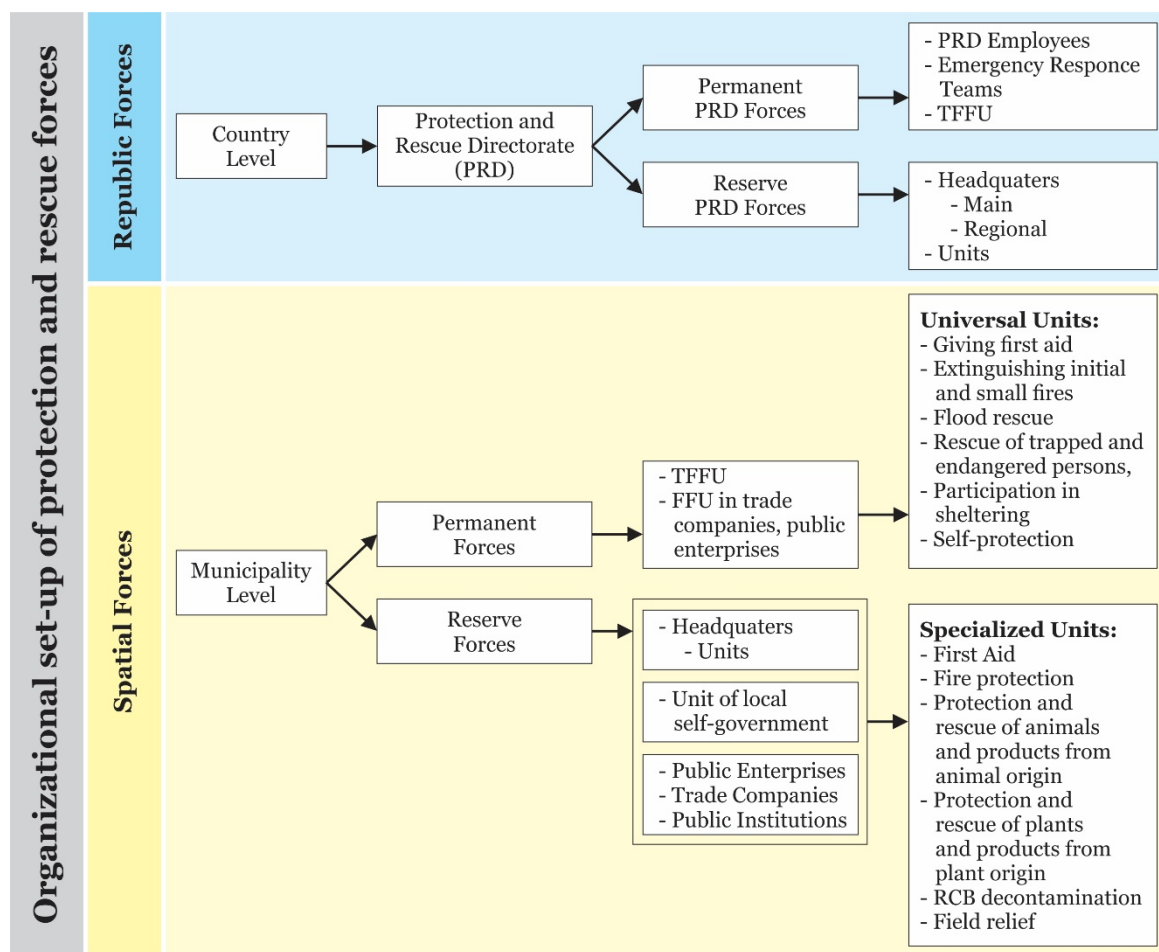


Fig. 1.2. Deployment of protection and rescue forces in N. Macedonia

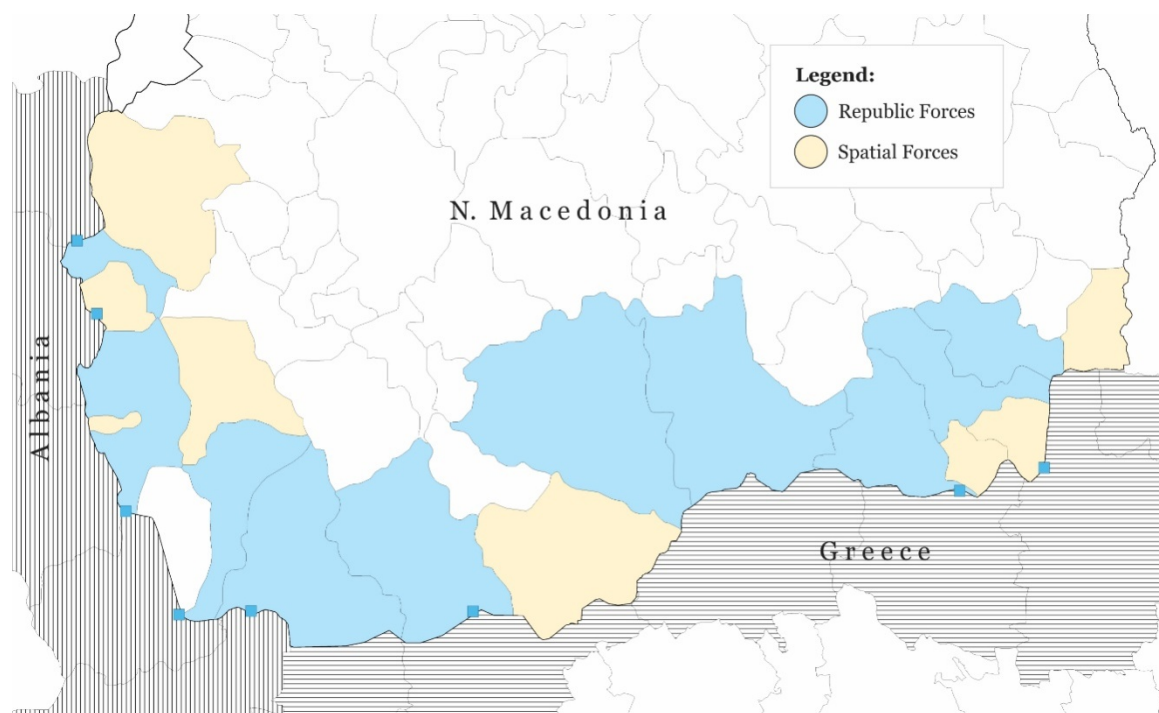


Fig. 1.3. Disposition of protection and rescue forces in CBR-MKD

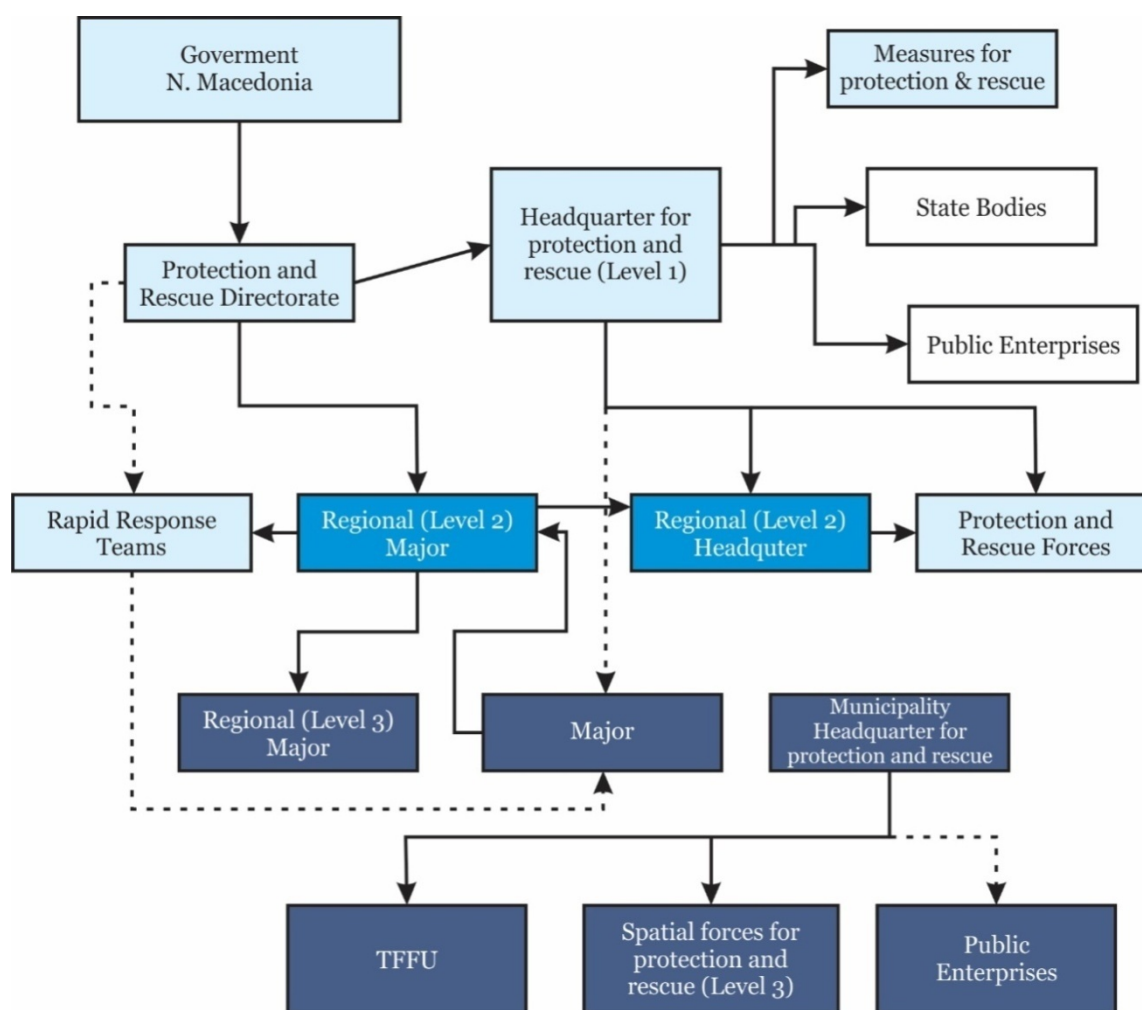


Fig. 1.4. Coordination scheme

When engaging the protection and rescue forces, the model of gradualism is used, with the owner's forces reacting first, then the municipalities and the City of Skopje, the Republic and the international community.

Protection and rescue forces in N. Macedonia has permanent (employees and teams of PRD, TFFU) and reserve composition(citizens that have obligations in army and civil protection).

1.1.1.6. Cross-border cooperation

Cross-border cooperation is regulated by international cooperation agreements or decrees given by the Government of the Republic of North Macedonia (Article 43 from the Law on Crisis Management; Article 148 from the Law on Protection and Rescue).

International cooperation agreements for disaster prevention and management are based on the United Nations Convention on the Transboundary Effects of Industrial Accidents, signed in Helsinki on March 17, 1992.

The main purpose of such international agreements is to establish legal framework for providing mutual support and assistance in case of disaster by:

- Planning and undertaking measures against floods, earthquakes, fires, environmental pollution, radiological hazards and other disasters that could have an impact on the territory of one and on the other side of the state border;
- Mutual notification of the dangers and consequences of disasters;
- Mutual assistance in protection, rescue and disaster relief;
- Cooperation in training and education of members of the protection and rescue units;
- Firefighting units and members of other relevant units, through information meetings, courses, trainings, seminars and etc.;
- Exchange of scientific and technical data and other documents important for disaster protection.

Republic of North Macedonia is also a signatory of the Memorandum between Republic of North Macedonia and NATO on facilitating border crossing procedures during emergencies.

As a Participating State of the Union Civil Protection Mechanism (UCPM), Republic of North Macedonia follows Host Nation Support (HNS) guidelines as well as NATO Civil Emergency Planning (CEP) Guidelines.

During 2020, the Crisis Management Center as a beneficiary of the IPA Cross-Border Cooperation Program with the Hellenic Republic 2014 - 2020 (IPA CBC), implemented activities of the following two projects, which are expected to be extended until 2021:

EL HELP - Integrated Operations Center for Providing Humanitarian Assistance. The HELP project aims to increase the capacity and readiness of humanitarian assistance in the cross-border area for effective and efficient disaster risk prevention, mitigation and management.

Development of two main containers (one for Greece, one for our country and one medical container) that will be used to perform key operations for disaster relief. These two containers are a command, control, communication and computer center, although in different countries they will be interconnected. They will be activated in case of need by applying the cross-border protocols for communication, coordination and cooperation in the Southeast Planning Region.

Partners from R. Greece includes: International University of Greece, Department of Mechanical Engineering, Ministry of Interior of Greece and Greek rescue team. Partners from North Macedonia are the Center for Development of the Southeast Planning Region and the Center for Crisis Management.

Oint J-CROSS - Joint Cross Border Cooperation for Securing Societies Against Natural and Man Made Disasters. The project aims in the long run to reduce the risks of natural and man-made disasters in the regions of Western Macedonia and Pelagonija.

Comments and observations

At the national level, there are no international agreements regulating the cooperation in this segment with the three countries (Greece, Albania, Macedonia), that is there is no direct legal regulation on the basis of which the cooperation is realized. The activities at the level of cooperation between the countries are realized with ad hoc activities and at the level of projects and project activities (as an example this project).

1.1.2. Greece

1.1.2.1. Emergency master plan

Greece is equipped against natural hazards with a general master plan named "Xenokratis". The purpose of the General Plan "Xenokratis" is to formulate a system of effective response to catastrophic phenomena for the protection of life, health and property of citizens, as well as the protection of the natural environment. "Xenokratis" is defined in the Y.A. 1299/2003 (Government Gazette 423 BD/ 10-4-2003) and was revised with an additional Y.A. 3384/2006 (Government Gazette 776 / 28-6-06) with which the Special Plan "Management of Human Losses" was approved.

In "Xenokratis" plan:

- The types of disasters and the corresponding terms of civil protection are defined.
- Roles are defined and design directions are given to Ministries, Regions, Municipalities, and Communities.
- It is clarified that all projects are approved by the General Secretariat of Civil Protection.
- "Xenokratis" identifies:
 - Services & agencies involved.
 - Bodies that direct and coordinate operational forces at all levels.
 - Provides essential information on:
 - Risk assessment.
 - Marking of vulnerable areas.
 - Preparation of special plans for each hazard and risk.

Greek master plan "Xenokratis" describes the involvement of multiple human resources, institutions and organizations. In particular:

- Specialized civil protection executives at central, regional and local level, who are assigned to supervise the elaboration and implementation of civil protection plans, programs and measures, as well as the coordination of the necessary actions.
- All public services, services of local authorities and utilities, which are operationally responsible for individual civil protection actions and especially for disaster preparedness and response (such as Fire Brigade, Coast Guard), Hellenic Police, National Emergency Center, Armed Forces, Earthquake Planning & Protection Organization, services of the Region and the Prefecture.
- Voluntary civil protection organizations, as well as specialized civil protection volunteers, at central, regional and local level, who are part of the planning of the General Secretariat for Civil Protection and undertake the support of prevention and rehabilitation plans and actions, as well as preparedness actions and disaster management.

Also, detailed terminology is provided within the context of "Xenokratis", involving scientific terms and definitions regarding -among many others- earthquake and landslide hazard and risk.

1.1.1.2 Emergency plan for earthquakes

Earthquakes, as phenomena, fall into the category of natural disasters, as defined in Annex A-1-1 of YA 1299/2003 (Government Gazette 423 B) "General Plan of Civil Protection with the password Xenokratis", because they can endanger life and property with adverse effects on the country's economy and infrastructure.

The elaboration and planning of the country's seismic policy as well as for the coordination of public and private resources actions for its implementation is based on the institutional framework of the Agency for Earthquake Planning and Protection (OASP), supervised organization of the Ministry of Infrastructure & Transport (Law 1349/1983, Government Gazette 52 A). The scientific research that concerns the investigation of the causes and the conditions of seismic events, is carried out in Greece by institutions for this purpose, such as the Geodynamic Institute of the National Observatory of Athens, the Institute Of Geological and Mineral Research (I.G.M.E.), various laboratories of University Departments (Seismology, Tectonics, Physics of the Earth's Interior, etc.). The General Secretariat for Civil Protection (GSCP) is the body responsible for processing, planning and monitoring the country's civil protection policy to deal with earthquake hazards and coordinates work and actions (Law 3013/2002, Government Gazette 102 A, as amended and in force). GSCP cooperates with other bodies, including OASP as responsible for seismic shielding of the country, utilizes the findings and proposals of these bodies, integrates them into the overall civil protection strategy and coordinates the management of the emergencies resulting from earthquakes (766/99 NSC).

In this context, the General Secretariat for Civil Protection, as the body of the Central Administration, with the main mission of coordinating the bodies involved in actions for earthquake risk management and in the context of the application of paragraph 1 of art. 6 of L. 3013/2002 (as amended and in force based on par. 2 of art. 104 of L. 4249/2014), as well as the General Plan of Civil Protection "Xenokratis" (YA 1299 / 7-4-2003), drafted the General Plan for Emergency Response and Immediate / Short-term Management of Consequences of the Earthquake Manifestation codenamed "Egelados" (Model Plan), based on which the roles and responsibilities of all stakeholders are identified, in accordance with the current institutional framework governing their operation, along with coordination guidelines for synergy, cooperation and their interoperability with the ultimate goal of their immediate and coordinated response to address the risks of earthquakes. In "Egelados", instructions to the Regions, Municipalities and Decentralized Administrations are also provided.

The purpose of the Model Plan is a) to facilitate the preparation of Municipalities at local level, by providing a detailed structure and contents of the emergency plans and b) to ensure their harmonization with the corresponding Emergency and Immediate / Short-Term Consequence Management Plans of the respective Regions and the General Secretariat of Civil Protection.

In specific, what the Model Plan does:

- Clarification of the roles and responsibilities of all the stakeholders involved in protection at local level, based on the current institutional framework.
- The review, update and harmonization of the guidelines for the bodies involved in local-level protection, in accordance with this plan and the drafting or updating of the corresponding "memoranda of action".
- Identification of the human resources and resources that can be allocated to local-level support, to deal with emergencies and management of the consequences of earthquakes.
- Ensuring the readiness of all operatively involved bodies at local level in every stage.

The Municipality, as a body of Civil Protection (art. 3 of Law 3013/2002 as applies), after the occurrence of earthquakes mobilizes and launches actions aimed at fulfilling the purpose of civil protection, which is primarily linked to the protection of citizens' lives and property

from disasters and infrastructure management in its area of responsibility. The actions of civil protection of the Municipalities stem mainly from Law 3013/2002 (as amended and in force), as well as the framework of Local Government –“Kallikratis” Program (Law 3852/2010, as amended and in force), according to which the Municipalities have been assigned important responsibilities for prevention, disaster preparedness, response and recovery.

1.1.2.2. Emergency plan for landslides

Greece has developed various emergency plans, many of them specialized with respect to the natural hazard targeted. However, Civil Protection has not published any formal (or governmental) guidelines tackling landslide hazards. Therefore, general plans and guidelines apply to emergency situations triggered by landslides.

Comments and observations

Greece, being a highly active -in terms of seismotectonic movements- area, has already developed both seismic design codes and emergency plans against earthquake hazard. Also, harmonization with the European standards is generally observed, when examining the legislation and design codes of Greece. Tested in real-life seismic events, Civil Protection organizations have fulfilled their responsibilities. However, Greece lacks a put-into-action prevention plan; only a limited number of vulnerability checks take place and almost no retrofit and risk management plans are active before an earthquake occurs.

Regarding landslides, Greece has a high number of studies and relevant research in its libraries, yet landslide hazard is an always evolving scientific subject in Greece. On the contrary, no specialized emergency plans are developed, at least formal, in action and recently updated. General provisions regarding natural hazards seem to fill in the gap of more specialized provisions, accompanied with informative TV spots, Internet campaigns, etc.

1.1.3. Albania

Referring to the Decision of the Council of Ministers No. 1020, date 16.12.2020, a Technical Advisory Commission (TAC) has been established and is functioning under the direction of the National Civil Protection Agency, in the Ministry of Defense, which advises on issues of reducing the risk of disasters for civil protection. This Commission is composed by representatives of the government and public institutions and services:

1. Ministry of Defense;
2. Ministry of Internal Affairs;
3. Ministry of Europe and Foreign Affairs;
4. Ministry of Finance and Economy;
5. Ministry of Infrastructure and Energy;
6. Ministry of Agriculture and Rural Development;
7. Ministry of Education, Sport and Youth;
8. Ministry of Health;
9. Ministry of Tourism and Environment;
10. Ministry of Justice;
11. Ministry of Culture;
12. General Directorate of State's Police;
13. Directorate of Local Issues and Prefectures;
14. General Directorate of State's Material Reserves;
15. General Directorate for Fire Protection and Rescue;

16. Institute of Geoscience, Energy, Water and Environment;
17. Albanian Geologic Service;
18. Institute of Public Health;
19. Institute of Applied Nuclear Physics;
20. National Institute of Culture Heritage;
21. Albanian Road Authority;
22. National Secretariat of Large Dams;
23. Polytechnic University of Tirana;
24. Institute of Food Safety and Veterinary;
25. National Agency of Environment;
26. National Agency of Forest;
27. Institute of Geographic and Military Infrastructure;
28. Construction Institute;
29. State Authority for Geospatial Information;
30. Agency of Water Resources Management and National Committee of Large Dams;
31. Agriculture University of Tirana;
32. Albanian Power Corporate;
33. Electricity Distribution Operator;
34. National Housing Authority;
35. National Inspectorate of Territory Defense.

Civil emergencies are categorized into:

- a) **local civil emergencies**, which come as a result of disasters that occur in a municipality and can be afforded through the actions of its competent structures;
- b) **regional civil emergencies**, which come as a result of disasters that occur in more than a municipality that, due to their nature, scale and extent, require the intervention of coordinated of several municipalities or regions;
- c) **national civil emergencies**, which come as a result of disasters that, due to their intensity, scale and extent require immediate intervention by all civil protection institutions, central and local, even with extraordinary measures, if necessary.

Below are listed the Laws and Decisions of Council of Ministries for the civil emergency:

- Law no. 45/2019 "on Civil Protection";
- Law no. 75/2016 "on the ratification of the Paris Agreement in the framework of the United Nations Convention on Climate Change";
- Decision no. 1020, 16.12.2020 "on the composition, functioning and tasks of the Technical Advisory Commission for disaster risk reduction";
- Decision no. 923, 25.11.2020 "on the functioning and organization of the Civil Protection Committee and the inter-institutional cooperation of the institutions and structures of the civil protection system";
- Decision no. 747, 20.11.2019, "On the organization and functioning of the National Agency of Civil Protection";
- Decision no. 148, 24.02.2016 "On the establishment and functioning of the Integrated Information and Statistics System of the Council of Ministers";
- Decision no. 965, 02.12.2015 "On inter-institutional cooperation of management structures in cases of civil emergencies and crises";
- Decision no. 664, 18.12.2002 "On the criteria and procedures for declaring a state of civil emergency";
- Decision no. 655, 18.12.2002 "On the establishment and functioning of the structure of the National Civil Emergency Response Planning System";
- Decision no. 654, dated 18.12.2002 "For temporary use by state bodies in emergency situations, of any private vehicle";

- Decision no. 531, 01.08.2003 "On the organization, functioning, duties and responsibilities of the Civil Emergency Service";
- Decision no. 329, 16.05.2012 "On the criteria and procedures for providing state financial assistance to cover damages caused by natural disasters or other disasters caused by human activity";
- Law no. 139/2015, "On Local Self-Government";
- Law no. 152/2015, "On the protection service from fire and salvation";
- Law no. 107/2016 "On the prefect of the region";
- Decision no. 532, 01.08.2003 "On the Responsibilities and Duties of the Department of Planning and Coping with Civil Emergencies";
- Decision no. 533, 01.08.2003 "On the Participation of Citizens in the Prevention and Coping with Civil Emergencies";
- Decision no. 835, 3.12.2004 "On the approval of the national plan for civil emergencies";
- Instruction no. 15, 10.07.2003 "On the Establishment of the Local Commission of Civil Emergencies, in the Municipality and Commune";
- Instruction no. 16, 11.07.2003 "On the Establishment of the Civil Emergency Planning Commission at the Regional Level";
- Law no. 115/2014 "On the administrative-territorial division of local government units in the Republic of Albania";
- Law, no. 45/2016, "On Volunteerism";
- Decision no. 1162, 24.12.2020, "For determining the procedures and deadlines for obtaining a certificate for the risk of entities that request to obtain a development / construction permit".

The National Plan for Civil Emergencies (PKEC) is the main policy document of the Albanian state in the field of civil emergencies, approved by Decisions of Council of Ministries no. 835, December 3, 2004.

This plan aims to:

- Prevent, mitigate and rehabilitate from any damage affecting the population, living thing, property, cultural heritage and environment from civil emergencies.
- To provide conditions for state institutions, public and private, for economic activities and for the population, for the transition from normal living and working conditions to an emergency situation, with the smallest possible losses for maintaining order, for people's lives, for living things, for property, for cultural heritage and for the environment, for the effects of a civil emergency.
- Ensure the use of all possible state resources for the purpose of public safety, the continuous preservation of the national economy, the localization of the emergency zone and the mitigation of consequences.
- Through this plan, the ways of communication and exchange of appropriate information are created, the strengthening of decision-making and, through coordination, the strengthening of the response capacities in all phases of the civil emergency cycle is achieved.
- In the long run, the main goal is that of prevention and relief, and the Emergency Plan is the necessary path to be followed in achieving this goal.

It is worth mentioning that PKEC is an important document drafted in support of law no. 8756, dated 26 March 2001, "On Civil Emergencies" and other laws directly or indirectly related to civil emergencies. In 2019 this law was repealed being replaced by law no. 45, 18.7.2019 "On Civil Protection".

In its content this plan describes the responsibilities and relevant laws for each curator for the organization of the civil emergency management system at national, regional and local level.

The PKEC is also a coordination tool designed through ongoing consultations and information provided by participating institutions and structures. To ensure the effectiveness of coordination, coordination functions should be undertaken within a structure previously accepted and supported by all protagonists of civil emergency management. For this reason, PKEC aims to bring together the protagonists throughout the phases of the emergency cycle. It encourages collaboration through transparency and contains considerable details about the roles and responsibilities of all the necessary protagonists.

The National Civil Emergency Plan of the Republic of Albania analyzes civil emergency issues through four phases of the civil emergency cycle:

- prevention and mitigation;
- preparation and defense;
- the answer;
- return to normal.

1.1.3.1. Local civil emergencies

The civil emergency directory in the municipality is the main unit for the management of the emergency at local level. This unit coordinates training and assistance in all activities in the field of emergency management by:

- worked directly with all other municipal structures;
- cooperating with voluntary agencies;
- coordinate with regional and central structures to provide guidance and expertise required for the municipality.

An emergency plan has not yet been drafted and approved for emergency management at the local level. Association of Albanian Municipalities with the support of the Hanns-Seidel foundation, Albania, have drafted a guide for municipalities for civil emergency management, in 2017. This guide can be used and implemented by any organization / institution that receives and has responsibilities for coping with civil emergencies. This guide shows the steps of preparing a plan and taking responsibilities in order to provide emergency services to anyone in crisis and emergency situation. The principles, ways, rules described in this instruction can be adapted according to the case and the nature of the municipality or institution that will be in charge of performing certain tasks in dealing with civil emergencies.

1.1.3.2. Natural Disaster Risk Assessment

In Albania, several projects and studies have been developed for risk assessment from natural disasters, among which can be listed:

- "Summary Report of the study on risk assessment in Albania", drafted in 2003, in support of the United Nations Development Program (UNDP) and the Ministry of Local Government and Decentralization Albania.
- Albania Post-Disaster Needs Assessment (PDNA), Volume A Report, Tirana, February 2020. The PDNA was realised through the engagement of the Government of Albania and its international partners: the European Union, the United Nations agencies, and the World Bank.

The Natural Disaster Risk Assessment Study in Albania is the first attempt to undertake the systematic collection of data on selected hazards and to assess the possible and expected losses of various elements at risk from the consequences of potential hazardous events. The main purpose of this study is the basics for planning in case of disaster and to build scenarios looking at natural hazardous events that are most likely to affect Albania. To achieve this goal, the study was organized in the following topics:

- Possible events and seismic hazards in Albania;
- Possible events and risks from landslides in Albania;
- Possible events and dangers from dam cracks;
- Possible events and risks from floods;
- Risks from heavy snow and avalanches
- Possible events and dangers from forest fires;
- Possible events and risks from epidemics;
- Possible events and technological risks;
- Risk assessment in developed areas of Albania.

On November 26, 2019, Albania was hit by a strong earthquake with magnitude $M_w = 6.4$. The earthquake caused 51 fatalities and injured at least 913 people. Also in the most affected cities, numerous material damages were registered. After few weeks, the Government of Albania requested support from the European Union, the United Nations, and the World Bank to undertake a full and comprehensive Post-Disaster Needs Assessment to identify the damage, losses, and recovery needs arising from the earthquake. The tripartite partners provided financial and technical support to conduct the assessment in addition to the resources the government made available.

Disaster risk characteristics, such as risk, exposure, vulnerability and their coping capacities are mostly in local level. In Albania there is a lack of understanding of policies for the reduction of natural disasters. In this context, several projects have been developed by local units to develop local plans for natural disaster reduction, with the support of the United Nations Development Program and CO-PLAN.

Comments and observations

Albania has few studies and relevant research for disaster risk assessment, but lacks an updated and specialized emergency plan. Despite Albania's progress in civil emergency management, more needs to be done to improve legislation, doctrinal concepts and implementation plans, to improve the role and contribution of each institution with legal responsibilities to civil emergencies, to strengthen inter-institutional cooperation and building the capacity needed to cope with a wide range of natural disasters.

1.2. Regional/European perspective

In recent decades, Europe has seen an increase in potentially disastrous natural events across the entire continent. Among these events, the ones that cause a high number of victims, injured, homeless, as well as huge economic losses are certainly earthquakes and floods and their cascading effects.

Regarding the prevention and the mitigation of natural disasters, for many years the European Commission (EC) has been funding projects through research and development framework programs that bring scientists and experts from all over Europe to collaborate with each other. This cooperation has further refined risk knowledge and resulted in a variety

of risk assessment methods, guidelines, and tools to support decision-makers as well as the future research.

Table 1.3 shows a few of these projects funded in the last 15 years, including the projects SHARE, SERA, and INFRA-NAT. The latter will be used in CRISIS respectively for:

- the seismic hazard model (SHARE project);
- the exposure model of the residential building stock (SERA project);
- the exposure model of the bridges in Macedonia as well the forms to collect the bridge data in Albania and Greece (INFRA-NAT project).

Table 1.3: International research and innovation activities at pan-European level funded by the European Commission

Acronym	Description and Funding Programm	Period	Results
SHARE	Seismic Hazard Harmonization in Europe (http://www.share-eu.org/node/6.htm ; FP7-Environment)	2009-2012	SHARE provided a community-based seismic hazard model for the Euro-Mediterranean region with update mechanisms.
SYNER-G	Systemic Seismic Vulnerability and Risk Analysis for Buildings, Lifeline Networks and Infrastructures Safety Gain (http://www.vce.at/SYNER-G/files/project/project-overview.html ; FP7-Environment)	2009-2013	SYNER-G developed an innovative methodological framework for the assessment of physical as well as socio-economic seismic vulnerability of buildings, transportation and utility networks, and critical facilities at urban and regional level.
MATRIX	New Multi-Hazard and Multi-Risk Assessment Method for Europe (website not available; FP7-Environment)	2010-2013	MATRIX defined a virtual city exposed to various types of hazards such as earthquakes, landslides, floods etc. to which a dynamic multi-risk process was implemented through the sequential Monte Carlo method, enabling the generation of coinciding and cascading events while accounting for time-variant vulnerability and exposure. The developed tools and methodologies for multi-type hazard and risk assessment has a focus on risk comparability, cascading hazards and time-dependent vulnerability within the framework of conjoint or successive hazards so as to enable analysts to optimise the risk assessment process and contribute to rationalising data management for hazards and vulnerability reduction. MATRIX also supports cost effective decisions on structural and non-

			structural mitigation/adaptation measures following a multi-hazard perspective.
NERA	Network of European Research Infrastructures for Earthquake Risk Assessment and Mitigation (website not available; FP7-Infrastructures)	2010-2014	NERA improved tools for assessing, monitoring, and reducing seismic risk. The approach focused on integrating various data sources, across the development of tools to use the information and promoting its access. Together with other European projects, NERA laid the foundations for EPOS.
REAKT	Strategies and Tools for Real Time EArthquakeRiskReduction (website not available; FP7-Environment)	2011-2014	REAKT developed a procedure to facilitate integrated use of data from operational forecasting models and early warning systems, thus providing decision makers and authorities with more efficient methods to mitigate earthquake risk in real time.
INFRARISK	Novel Indicators for Identifying Critical INFRAstructure at RISK from Natural Hazards (http://www.infrarisk-fp7.eu/ ; FP7-Environment)	2013-2016	INFRARISK developed several tools to assess the risks of natural disasters on road and rail networks.
RASOR	Rapid Analysis and SpatialisationOf Risk (http://www.rasor-project.eu/ ; FP7-Environment)	2013-2016	RASOR developed a platform for multi-hazard risk analysis, including geological and hydrometeorological hazards using the latest Earth Observation (EO) techniques and data, which includes the 12m resolution TanDEM-X Digital Elevation Model (DEM) from Airbus/DLR. The platform provides insight into natural hazards through layers of spatial information and a scenario-driven modelling system to project situations into the future and model multi-hazard risk both before and during an event
EPOS	European Plate Observing System (https://www.epos-eu.org/ ; FP7-Infrastructures & H2020)	2016-2019	EPOS is a long-term project. The main product is a multidisciplinary platform to facilitate integrated use of data, data products, and facilities from distributed research infrastructures for solid Earth science in Europe.
ARISTOTLE	All Risk Integrated System TOwards Trans-boundary	2016-2018	ARISTOTLE led to collaborative groups of experts in the field of

	hoListicEarly-warning (http://pilot.aristotle.ingv.it/ ; DG-ECHO)		severe weather, floods, volcanos (only for ashes and gases hazard deriving from eruptions), earthquakes and the related tsunamis. They provide theEmergency Response Coordination Centre (ERCC) with a rapid assessment of a potential disaster situation or, when possible, forecasts of a potential disaster.
LIQUEFACT	Assessment and mitigation of liquefaction potential across Europe: a holistic approach to protect structures/infrastructure for improved resilience to earthquake-induced liquefaction disasters (http://www.liquefact.eu/ ; H2020)	2016- 2019	LIQUEFACT developed a set of technical and commercial tools to understand and mitigate the effects that Earthquake Induced Liquefaction Disasters (EILDs) could have on the built environment.
SERA	Seismology and Earthquake Engineering Research Infrastructure Alliance for Europe (http://www.sera- eu.org/en/home/ ; H2020 - INFRAIA 2016)	2017- 2020	SERA contributed to improve the access to European databases, by providing innovative research and development (R&D) based solutions in the field of seismology and earthquake engineering and by reducing the exposure of our society to risks related to natural and anthropogenic seismic events.
INFRA-NAT	Increased Resilience of Critical Infrastructure to Natural and Human-Induced Hazards (http://www.infra-nat.eu/ ; DG-ECHO)	2018- 2019	INFRA-NAT created a database of road bridges in the project case-study areas. Depending on the level of knowledge of the bridges, numerical models have been developed to assess the seismic vulnerability of the bridges. These models have been implemented within a WebGIS platform that allows to address the resources to be invested for a consequent increase of resilience.
IPA FF	EU Support to Flood Prevention and Forest Fires Risk Management in the Western Balkan and Turkey	2020- 2023	The action is intended to improve capacities of relevant institutions to develop flood risk management plans based on the good practices of the EU Member States and in line with the EU Floods directive, and strengthen existing Early Warning Systems for floods, including cross border aspects.

To encourage cooperation among individual-regions or countries, EU set up INTERREG (<https://interreg.eu/>). INTERREG has been financing a series of programs in the framework of health, research, environment, transport, etc. through the European Regional Development Fund. CRISIS itself has been financed in one of these programs. INTERREG implies a cooperation on three different levels:

- Cross border cooperation (INTERREG A), among adjacent regions from at least two different Member States lying directly on the borders or adjacent to them;
- Transnational cooperation (INTERREG B), among national, regional, and local authorities to establishing large groups of European regions in favor of greater integration and interaction among the countries within the Union;
- Interregional cooperation (INTERREG C) which implies a more large-scale cooperation, including at the pan-European level.

Among past research projects funded within the INTERREG programs, it is important to mention the project J-CROSS (Joint Cross Border Cooperation for Securing Societies against Natural and Man-Made Disasters) since it involved two neighboring countries that are also cooperating in CRISIS. J-CROSS was funded within the INTERREG IPA Cross border Cooperation Programme "Greece - Republic of North Macedonia 2014-2020, <http://www.ipa-cbc-programme.eu/approved-project/63/>". The project started in July 2018 and ended in January 2020. The geographical areas of interest in J-CROSS were: the Region of Western Macedonia, Greece and the Pelagonia Region, and the Republic of North Macedonia. Instead, the project consortium was made of:

- Region of Western Macedonia, Lead partner;
- Aristotle University of Thessaloniki;
- Center for Development of Pelagonia Region (CRPPR), Republic of North Macedonia;
- Crisis Management Center (CMC), Republic of North Macedonia;
- National Observatory of Athens (NOA).

The main purpose of the project was to minimize the risks of natural and man-made disasters in the regions of Western Macedonia and Pelagonia. The outcomes of the J-CROSS project include:

- Study on landslides mapping as a result of floods in the Pelagonia region (Deliverable 3.2.5);
- Seismicity study in the cross-border area of Florina and Pelagonia basin (Deliverable within WP-3);
- Guide for raising awareness of natural disasters (Deliverable 2.2.2).

Other projects funded by EC to prevent and mitigate natural disasters (especially related to earthquakes and landslides) in cross-border areas are summarized in Table 1.4. The selected projects in Table 1.4 mainly focus on earthquakes and landslides (also CRISIS topics) and saw the cooperation of neighboring countries that are also different from those involved in the CRISIS project.

Finally, in terms of global disaster risk mitigation, it is important to mention the Sendai Framework for Disaster Risk Reduction 2015-2030, adopted by the member states of the United Nation (UN) in 2015.

In particular, in 2016 the United Nations Office for Disaster Risk Reduction (UNISDR) commissioned guidelines for national disaster risk assessments (NDRA). They are part of the initiative known as "Words into Action", i.e. a set of thematic guidelines through which UNISDR supports the implementation of the Sendai Framework at the national level.

Specifically, the guidelines for the NDRA recommend the States to establish a national system for understanding disaster risk that should be integrated with related policies and planning mechanisms. (UNISDR, 2017). The guidelines for NDRA also recognize the importance of a joint action among cross-border areas and neighboring countries in order to have more decisive effects in reducing and mitigating natural disasters, especially in those areas most at risk.

Table 1.4: International research and innovation activities funded by the European Commission within cross-border programs.

Acronym	Name of the project	Period	Consortium	Aims&Results
DACEA	Danube Cross-border system for Earthquakes Alert, (http://www.cbcrromaniabulgaria.eu/)	Aug. 2010-Feb 2013	Romania Bulgaria	DACEA was funded by the EC to prevent natural disasters generated by earthquakes in the cross-border area Romania-Bulgaria, by taking into account the nuclear power plants and other chemical plants located along the Danube. The main results of the project were studies on seismicity, hazard and seismic risk as well as social impact studies of earthquakes in the areas under investigation. DACEA helped to improve intervention procedures as well as the use of the Seismic Alert System, thus creating a monitoring network of active seismic zones, which aims at implementing an earthquake early warning system addressed to central and local authorities.
ISec	Intelligent strategic cross-border development for response in case of major natural and man-made hazards and disasters (website not available)	2017-2019	Bulgaria Turkey	The main objective of ISeC was the increasing of operational capabilities to have an effective and efficient bilateral response to natural or man-made disasters in the cross-border area. ISeC developed standard operating procedures (SOPs) and a joint response plan for the response to severe natural and man-made disasters in the cross-border area.
SciNetNatHazPrev	A Scientific Network for Earthquake, Landslide and Flood Hazard Prevention (http://scinetnathaz.net/)	2013-2015	Greece Ukraine Moldova Bulgaria Turkey Romania	<p>The objective of SciNetNatHazPrev was to create a strong partnership among the geographic areas involved in the project across the networking of scientists and experts in the field of earthquake, landslide, and flood hazard. These experts collaborated and shared their experiences to study earthquake, landslide, and flood hazard as well as to mitigate their economic and social effects.</p> <p>In SciNetNatHazPrev common methodologies and strategies have been selected to be adopted for landslide, earthquake, and flood prevention. The same methodologies and strategies were then tested on a regional and municipal scale within project case-study areas. Finally, a WebGIS platform was developed aiming at:</p> <ul style="list-style-type: none"> freely disseminating the geospatial data on flood, landslide and seismic hazard assessment to the scientific community (especially geographic areas involved in the project). supporting the decision makers and the public authorities of geographical areas involved in the project.

SEQ	SensEQuake Sensor Monitoring and Decision Support for Earthquakes (https://id3as.org/project.php?id=21)	2019- 2020	Germany Netherlands	The main objective of SEQ was to encourage the use of data from a network of sensors already deployed in the case-study area in case of emergency, as a support for decision-makers. After running a series of damage scenarios through scenario earthquakes and loss estimation tools, in SEQ a heat map was produced where the areas at higher seismic risk have been identified. SEQ also provided with the integration of the existing network of sensors, strengthening it in the areas at highest risk identified in the heat map.
SafEarth	Transnational advanced management of land use risk through landslide susceptibility maps design (website not available)	2017- 2019	Bosnia Croatia Montenegro	The main objective of SafEarth was to identify zones prone to landslides in the project case-study area. The main results of the SafEarth project was a landslide susceptibility map related to the project case-study area as well as a WebGIS platform where data on landslides and landslide-prone areas were displayed. Both products were intended to support local decision makers in limiting damages and protecting communities living in landslide-prone areas.
FLAT	Flood and landslide assistance and training (https://flat.italy-albania-montenegro.eu/)	2018- 2020	Italy Albania Montenegro	The main objective was to improve the rapid response to floods and landslides the project case study areas. FLAT produced risk analysis for flood and landslides in Montenegro plus recommendation and practical guidebook for citizens about the actions to be followed in case of floods and landslides.
PyrMOve	Prevention and cross- border management of risk associated with landslides (https://www.pyrmove.eu/)	2019- 2022 <i>Still ongoing</i>	Spain Andorra France	The main objective of PyrMOve is to prevent and manage the risk associated with landslides in the area of the Pyrenees.
REDACT	Rapid Earthquake Damage Assessment Consortium (https://www.redact-project.eu/)	2020- 2022 <i>Still ongoing</i>	Greece Romania Moldova Turkey	This cooperation aims at improving the joint cross-border monitoring of environmental data and information as well as studies/methodologies on seismic disaster prevention, management, and mitigation of seismic risk. The above is preparatory to the development of a service based on innovative technologies to be used in the field of seismic emergency preparedness and response.

2. Identification of impediments

Gathered data and information have identified a number of impediments related to cross-border cooperation. There is insufficient knowledge and understanding of the different administrative and disaster management structures and work processes accompanied by the language barriers. Also, there are no established protocols, or regulated direct cooperation with related institutions, which result in difficult communication and exchange of data, information, materials, practices and experiences. Another notable impediment is lack of structure in cross-border agreements and lack of concrete cross-border operational plans.

3. Conclusions and recommendations

Data on current policies, procedures and guidelines for each country were collected using a narrative literature review. Inspiring examples of EU supported cross-border and transnational cooperation on risk management across Europe were presented. The cross-border cooperation in disaster management, among the three countries, exists under different forms. Generally, all international activities are planned depending on the current situation on the ground in accordance with the possibilities and needs.

Based on the all collected information and findings, the recommendations for police makers would be towards clear description of contacts and responsibilities of the relevant institutions to their neighboring counterparts and facilitation of their work and activities. This is to be achieved by continuous organization of meetings, joint exercises, exchange of knowledge and all the work required for successful cross-border cooperation as it is of crucial importance for all the people involved to know each other, and to understand the different administrative structures and work processes. Related to this governments should support the institutions in realization of those activities by providing sufficient funds and appropriate resources.

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