STATE-OF-THE-ART REPORT

Towards a macro-regional disaster management framework in the Danube Region

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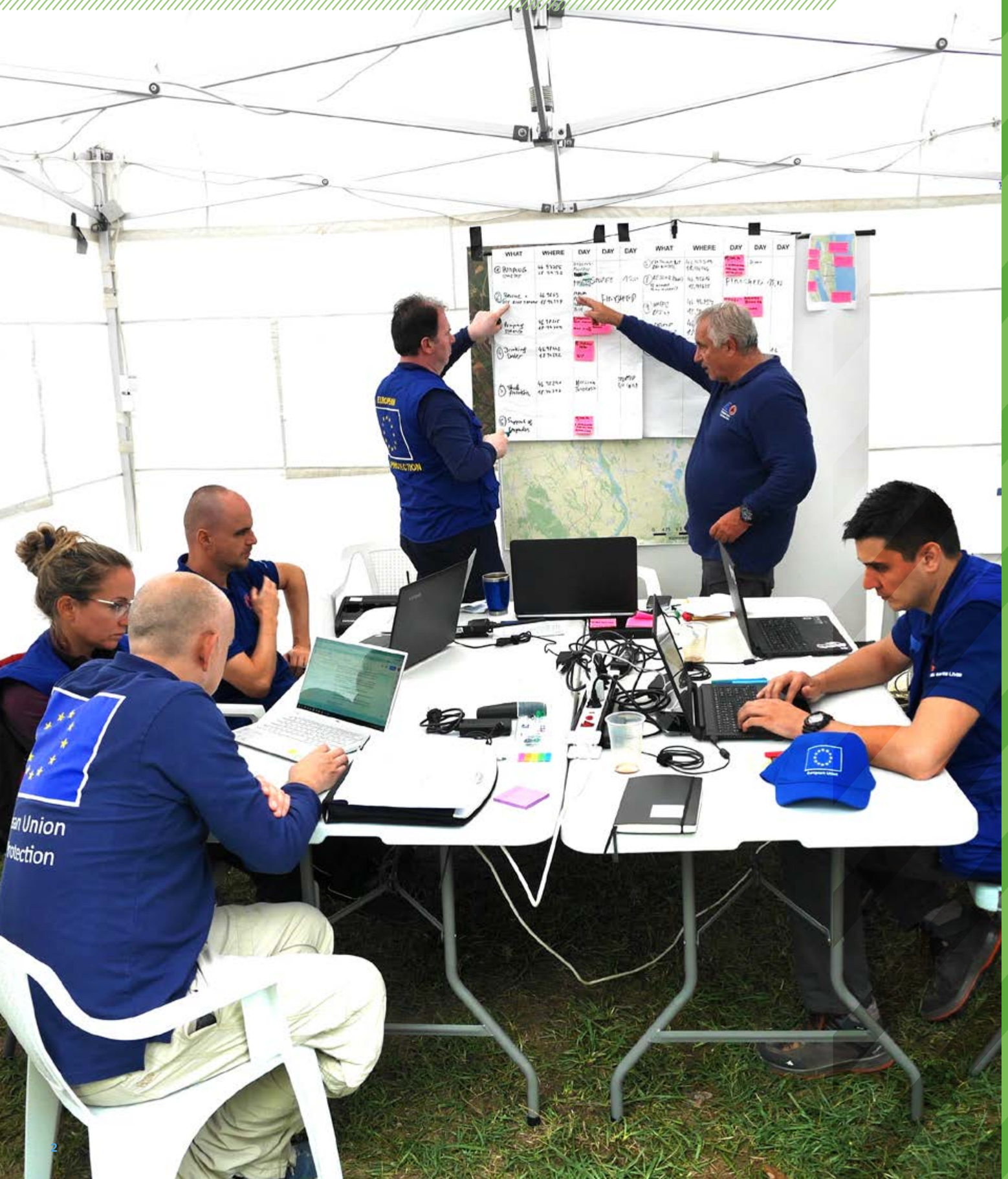
DANUBE REGION strategy Environmental Risks



“**Responders are ready to support, no matter what. The main question is: ‘Is there a framework to support their mission?’** If there is no system in place, and the units deploy without adequate arrangements, it might be more harmful than helpful. I truly believe in coordination and preparedness. Therefore, we are working on building a network in the Danube Region, which would give flexibility and guidance at the same time, so the members can rely on a clear process and procedures.”

Kinga Perge
Senior Advisor at the EUSDR PA5

Authors

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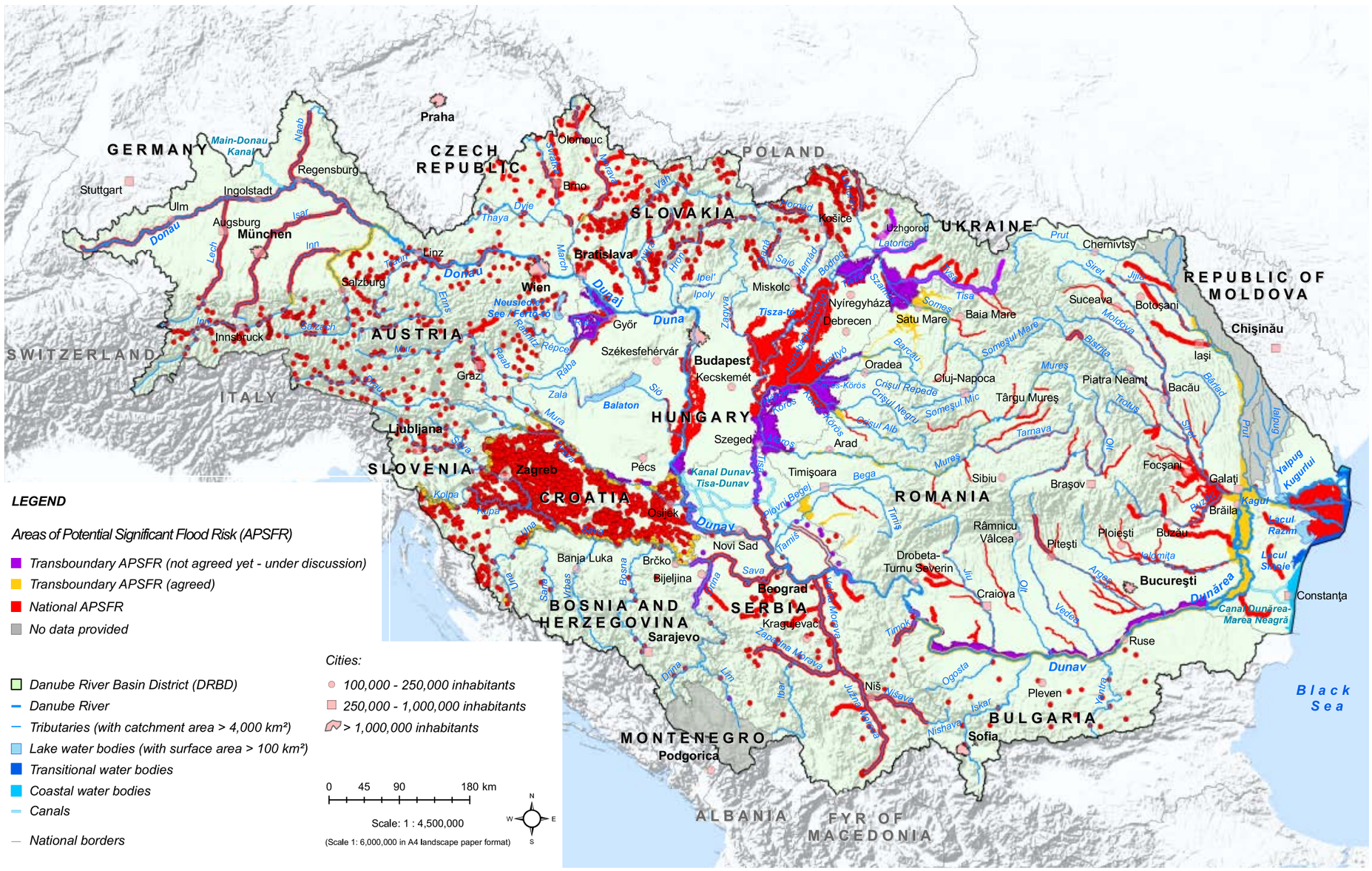
Table of content



1 Background and context

In the recent years several natural disasters affected the Danube region, including floods, droughts, storms and high winds. Most notably in 2002, 2006, 2013 and in the summer of 2014, parts of the Danube River Basin District were being affected by very strong or extreme flooding events. There were significant damages caused by seasonal fires during the dry season, also the extreme weather conditions are causing hailstorms, damaging houses and triggering flash floods in mountainous regions. Industrial accidents were also evident in the region, often the risk spots are connected to tailing management facilities and other industrial factories located close to the Danube or to the tributary of the river. These events caused significant human and economic damages in the affected countries and communities.

In 2006, four casualties were reported in the Czech Republic and Slovakia, and the costs and damages amounted to almost 600 million Euro in the whole basin. In 2010, there were 35 casualties, and damages of around 2 billion Euro occurred, a figure which was even surpassed in 2013 (2.3 billion Euro damages, mostly in Germany and Austria; additionally, 9 casualties were also reported from Austria and Romania). And the Sava River Basin in Croatia and Bosnia and Herzegovina as well as Serbia was hit very hard in May 2014, effecting 2.6 million people, killing 79, and causing almost 4 billion Euros damage in the three countries.

Floods, droughts, wildfires and low-flow events, as well as water-scarcity situations and extreme storms, are likely to become more intense, longer and more frequent for the next period due to climate change. Hence, the nations of this region are faced with several challenges in coping and managing with these natural and man-made hazards. The past events have shown several limiting factors including:

1. Room for improvement in coordination and communication among different countries and agencies, which can make it difficult to effectively respond to a disaster that affects multiple countries.
2. Inadequate infrastructure, such as levees, dams, and flood control systems making the region vulnerable to flooding and other natural disasters.
3. Limited funding and resources for disaster preparedness and response making it difficult for governments and organizations to effectively respond to disasters.

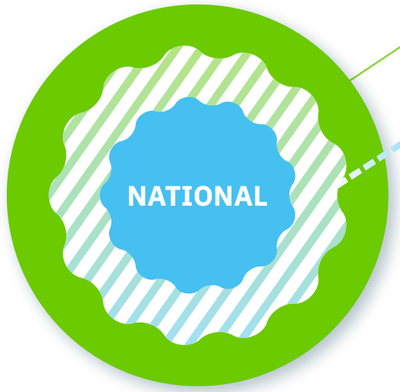
These challenges highlight the need for novel approaches with a unique macro-regional perspective to cooperation and coordination in disaster management.

Scope and objectives

2

Against this background the report provide insights into a multitude of activities and projects that were implemented in the past years with the objective to build and strengthen international approaches and capabilities, which should eventually lead to the establishment of a macro-regional disaster management framework.

The Danube macro-regional disaster management framework could complement existing frameworks, such as the Union Civil Protection Mechanism (UCPM), by providing a more focused and coordinated approach to disaster management in the Danube region.



EUROPEAN
- Standards for international deployments

MACRO-REGIONAL
- Different requirements & procedures needed
- Strong cross-border linkages across countries (culturally connected)
- More volunteer focused

> Basis for the developmentof tailored system/framework

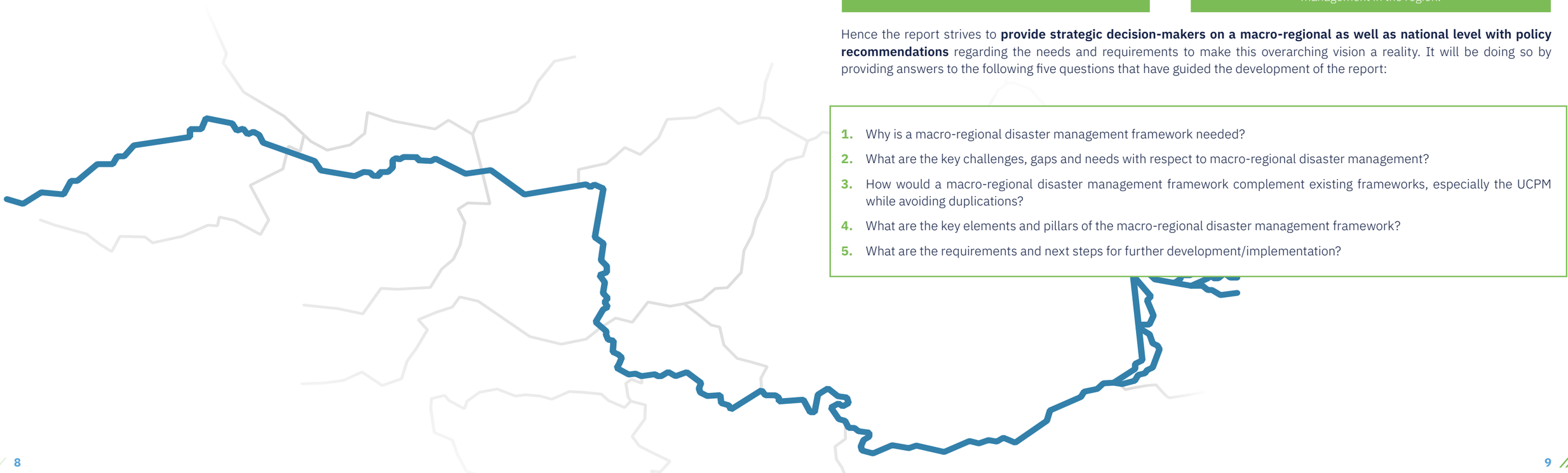
A macro-regional disaster management framework in the field of flood protection and disaster management is needed in the Danube region for a number of reasons:

MACRO-REGIONAL DISASTER MANAGEMENT FRAMEWORK

Reason why we need it	Helps to
Shared challenges The Danube Region is particularly vulnerable to floods, and many of the countries in the region share similar challenges in terms of flood protection and disaster management.	Address these shared challenges more effectively.
Transboundary issues Disasters do not know borders. Many of the floods that affect the Danube region are transboundary in nature and can have significant impacts on multiple countries.	Address these transboundary issues and ensure that the response is coordinated across the region
Complexity of risks and vulnerabilities Floods and other natural disasters in the Danube region are becoming more complex and more challenging to predict and manage.	Improve our understanding of these risks and vulnerabilities and to develop more effective strategies for reducing the risks and protecting communities.
Limited resources Many of the countries in the Danube region have limited resources to invest in flood protection and disaster management.	Pool resources and expertise across the region, which would make it possible to invest in more effective flood protection and disaster management strategies.
The need for coordination and cooperation The Danube region encompasses several countries with different legal systems, policies, and capacities.	Improve the coordination and cooperation among the countries, which would make the response to floods and other natural disasters more efficient and effective. The EU Strategy for the Danube Region Environmental Risks Priority Area and its Disaster Management Working Group complements the Union Civil Protection Mechanism regarding disaster management in the region.

Hence the report strives to **provide strategic decision-makers on a macro-regional as well as national level with policy recommendations** regarding the needs and requirements to make this overarching vision a reality. It will be doing so by providing answers to the following five questions that have guided the development of the report:

1. Why is a macro-regional disaster management framework needed?
2. What are the key challenges, gaps and needs with respect to macro-regional disaster management?
3. How would a macro-regional disaster management framework complement existing frameworks, especially the UCPM while avoiding duplications?
4. What are the key elements and pillars of the macro-regional disaster management framework?
5. What are the requirements and next steps for further development/implementation?



Kinga Perge

Senior Advisor for the EU Strategy for the Danube Region Environmental Risks Priority Area (co-coordinated by Hungarian Ministry of Foreign Affairs and Trade)

Kinga is looking back onto a professional career in which she obtained a multitude of skills and competencies which she continuously leverages and expands in her manifold roles and functions within the Hungarian and International disaster management environment.

She holds a MSc degree in geography and possess extensive experiences in info-communications by serving as a geoinformatics expert at the Hungarian disaster management for eight years. As a Search and Rescue expert (UN INSARAG) who is also trained within the European Union Civil Protection Mechanism (EUCPM) she regularly acts as a trainer for EU and non-EU USAR teams, as well as European Civil Protection Teams in international field exercises and training courses. As Project director of Budapest Firefighter Association, she has coordinated multiple international disaster management projects. Furthermore, in her capacity as president of MAGOR NGO Association for Disaster Response she is responsible for the design and conduct of exercises.

Why is a macro-regional disaster management framework needed?

The concept of a macro-regional disaster management framework in the Danube region originates from joint preparedness and response activities of practitioners from various Danube countries. When we started to organise large-scale field exercises with my team (MAGOR NGO) for those units, who would deploy cross-border or international, we quickly realized, that we have a lot more in common than just our general culture and history. We share decades of history of how we prepare for disasters and emergencies, and **our regional culture of preparedness activities have unique characteristics'**. We came to understand that most organizations are used to linear and task-based approaches when training and exercising, while the international disaster response environment nowadays requires lateral thinking. Furthermore, many volunteer response units do not even have access to structured preparedness activities. Parallel to these trends, we are faced with an **ever more demanding disaster environment** due to the increasing number and frequency of occurrence of disasters. The role of volunteer response organisations also changed, and their contribution is inevitable in disaster response. **To conclude, the disaster environment is more demanding now; thus, we must ensure that we align our preparedness approaches accordingly.**

One way of doing so is through participant-driven exercises and by implementing state-of the-art training approaches in adult learning that weren't commonly used in the field of disaster management in our region. We realized that to change this and to improve our preparedness level, it is not enough to organise an exercise once a year to a limited number of organisations and only when finances are available. Instead, **we need to move this to a strategic level** and create a framework for the stakeholders and organisations at macro-regional level, **so joint and structured preparedness activities can be implemented at operational level.**

What are the key challenges, gaps and needs with respect to macro-regional disaster management?

During the past years we managed to kickstart the activities which will eventually lead to a working model of macro-regional disaster management framework. But it's not happening overnight. While responding to disasters usually happens in a very fast manner, creating a framework seems to happen in very slow motion. It's very important to understand the necessity of strategic level discussions and development of policy recommendations. Without them, the on-the-field actions remain random from an international viewpoint. It is challenging to align these two activities with very different pace but targeting the same organisations. In the meantime, it is crucial to involve both the governmental and non-governmental disaster management stakeholders and enquire about their gaps and needs regarding cross-border and international disaster management. During the past three years, we managed to derive the most relevant findings through the different project activities (DiMaND, PROFOUND and DAREnet). The evaluation results of hands-on training and field exercises, as well as expert discussions and annual practitioner fora clarified the picture of what is needed at macro-regional level. In my opinion, it leads back to the initial triggering thought, that harmonised preparedness activities are needed, and that there's a gap in standardisation of procedures for disaster response capacities, setting a minimum level.

How would a macro-regional disaster management framework complement existing frameworks, especially the UCPM while avoiding duplications?

The main advantage of our network is exactly its macro-regional character. It represents a missing link in between EU-level and national-level disaster response. Through the EU Strategy for the Danube Region Environmental Risks Priority Area (EUSDR PA5) and its Disaster Management Working Group, stakeholders are encouraged to improve cross-border cooperation and consider these seemingly-to-be local matters as cornerstones of a macro-regional cooperation framework. At the same time, (macro-)regional cooperation could present a great added value to UCPM, but only if it is structured and systematised. I must add that it's a very important task to identify the right and well-defined role of our macro-regional disaster management network within the overall EU-level response framework. I believe we are on the right track, and the UCPM is very open for our ideas and joint work, supported by the EU legislation, and most importantly by the experts and policy level stakeholders from DG ECHO. Jointly we can ensure that the existing mechanisms are not duplicated, rather used in a more efficient way – either on a bilateral basis between countries, through the cooperation between the countries within the Danube macro-region or by triggering the UCPM. These layers are dependent on each other and build on one another. There are no clear lines, just as the disasters do not know borders either.

What are the key elements and pillars of the macro-regional disaster management framework?

I truly believe in coordination and preparedness. Therefore, we are working on building a network in the Danube Region, which would give flexibility and guidance at the same time, so the members can rely on clear processes and procedures. My mission is to ensure and encourage the members of this network to participate in joint preparedness and response activities. However, we can only engage in joint actions if we have a network to rely on. The network itself is the key, which is not only a list of organisations, but also a community of experts who work for the same aims and objectives. Our main tasks as EUSDR PA5 Disaster Management Working Group (DMWG) is to maintain and develop this network, support the establishment of partnerships and encourage the development of project proposals to have the necessary funding to reach the common goal. I consider the EUSDR PA5 DMWG not only as a coordinator, but also as a facilitator of exchanges and knowledge sharing, as well as a disseminator of results.

What are the requirements and next steps for further development/implementation?

Our network should continue to develop and expand. Our initial goal was and still is to involve at least one governmental and one non-governmental organisation from each Danube country. Compared to this preliminary idea, we realised that the importance of having multiple non-governmental bodies is justified, since the governmental domain is usually covered by one organisation or more centralised, while the civil sector is more segmented and includes humanitarian, volunteer firefighter and civil protection organisations. Their representation is extremely important, as it fills a gap when it comes to disaster response. Furthermore, the network also needs to find its role within the UCPM, as well as establish cooperation with the other macro-regions and regional networks. Having a look at existing solutions and sharing knowledge and common challenges will speed up the process of developing our framework and procedures.

European and international frameworks

The European Union has developed several complementary frameworks and strategies to address disaster risk management in Europe and beyond. These frameworks cover the whole disaster management cycle and have distinct characteristics. From the perspective of the Danube River Region the following are the most important frameworks.

3.1. EUROPEAN CIVIL PROTECTION MECHANISM (UCPM)

The European Civil Protection Mechanism (UCPM) is a system that allows the European Union and its member states to coordinate their efforts to respond to disasters and emergencies, both within the EU and in countries outside the EU. The UCPM is managed by the European Commission's Directorate-General for Humanitarian Aid and Civil Protection (DG ECHO) and is designed to provide a quick and efficient way for countries to request and receive assistance from other EU countries in the event of a disaster or emergency.

The UCPM is activated in response to a wide range of disasters and emergencies, including natural disasters such as floods and earthquakes, technological disasters such as industrial accidents, and man-made disasters such as terrorist attacks. When the UCPM is activated, member states can offer assistance in the form of personnel, equipment, and other resources, which is coordinated through this mechanism with the aim to ensure that the most appropriate and effective assistance is provided.

The UCPM is based on the principle of solidarity, which means that member states are expected to offer assistance to other countries in need, regardless of their location or the cause of the disaster or emergency. The UCPM also works closely with other international organizations, such as the United Nations and the Red Cross and Red Crescent Movement, to provide assistance and support to affected communities around the world.

The EU Civil Protection Mechanism and its new Decision (EU) 2019/420 of the European Parliament and of the Council of 13 March 2019 and the Regulation (EU) 2021/836 of the European Parliament and of the Council of 20 May 2021 (amending Decision No 1313/2013/EU on a Union Civil Protection Mechanism) **includes the importance of regional level disaster prevention and management**, highlighting that their response capacities need to be appropriately involved in coordination and deployment activities. It should minimize overlaps and foster interoperability. These disaster management authorities can play an important preventive role and they are also the first to react in the aftermath of a disaster, together with their volunteers' capacities." (Decision (EU) 2019/420 of the European Parliament and of the Council of 13 March 2019).

"To improve resilience and planning for disaster prevention, preparedness and response, the Union should continue to advocate for investment in prevention of disasters across borders and sectors, and for comprehensive risk management approaches that underpin prevention and preparedness, taking into account a multi-hazard approach, an ecosystem-based approach and the likely impacts of climate change, in close cooperation with the relevant scientific communities, key economic operators, regional and local authorities and non-governmental organisations operating in the field, without prejudice to the established Union coordination mechanisms and competence of the Member States. "

Regional solutions specific to environmental risks and involvement of volunteer non-governmental organizations and authorities are therefore needed.

The more operationally focussed UCPM is complemented by several multilateral initiatives that aim to enhance disaster management efforts within Europe with research and scientific knowledge. The most notable initiative is the Disaster Risk Knowledge Management Centre (DRMKC) of the Joint Research Centre of the European Commission (JRC), which works to improve the knowledge and understanding of the risks and impacts of natural disasters. The JRC also provides technical support to disaster management authorities and supports the development of early warning systems.

3.2. EU STRATEGY FOR THE DANUBE REGION (EUSDR)

The EU Strategy for the Danube Region (EUSDR) is a policy framework that was adopted by the European Union (EU) in 2011 to promote cooperation and development in the Danube region, which encompasses 14 countries along the Danube River. The EUSDR aims to promote economic, social, and environmental sustainability in the region, and to address common challenges and opportunities through cooperation and coordination among the countries in the region. The EUSDR is focused on four main policy areas: **connectivity, competitiveness, sustainability, and security**. To achieve these goals, the EUSDR works on a range of issues, including infrastructure development, environmental protection, energy security, and cultural cooperation.

The EUSDR is implemented through a series of specific actions and initiatives developed and implemented by the countries of the region in cooperation with the EU and other partners. These actions and initiatives are designed to address specific challenges and opportunities in the region and to support the achievement of the overall objectives of the EUSDR.

The EUSDR Environmental Risks Priority Area (PA5) target areas are connected to the management of the hazards which are threatening the Danube region. The coordination of the EUSDR PA5 is managed by Hungary and Romania.

EUSDR PA5 Objectives

1. To address the challenges of water scarcity and droughts in line with the Danube River Basin Management Plan – Update 2015, the report on the impacts of droughts in the Danube Basin in 2015 (due in 2016) and the ongoing work in the field of climate adaptation.
2. Provide and enhance continuous support to the implementation of the Danube Flood Risk Management Plan – adopted in 2015 in line with the EU Floods Directive – to achieve significant reductions of flood risk events by 2021, also taking into account potential impacts of climate change and adaption strategies.
3. To continuously update the existing database of accident hazard spots (AHS Inventory), contaminated sites and tailing management facilities.
4. To support the assessment of disaster risks in the Danube Region, encouraging actions to promote disaster resilience, preparedness and response activities in line with the European Union Civil Protection Mechanism.

To further the cooperation in the field of disaster management the EUSDR PA5 Disaster Management Working Group (DM-WG) was established in 2019. The Concept of DM-WG was approved by written procedure in 2020, based on which the "Terms of Reference" document was developed, covering the most important topics in the field.

3.3. EU STRATEGY FOR THE BALTIC SEA REGION (EUSBSR)

The European Union Strategy for the Baltic Sea Region (EUSBSR) was the first macro-regional strategy within the European Union. It aims at reinforcing cooperation within this large region to tackle several common challenges. The strategy also contributes to major EU policies and reinforces the integration within the area.

The strategy is divided into three main objectives: **saving the sea, connecting the region and increasing prosperity**. Each objective relates to a wide range of policies and has an impact on the other objectives. The strategy was approved by the European Council in 2009 following a communication from the European Commission. The strategy is an agreement between the Member States of the EU and the European Commission to strengthen cooperation between the countries bordering the Baltic Sea in order to meet the common challenges and to benefit from common opportunities facing the region.

The EU member states involved in the EUSBSR are Sweden, Denmark, Estonia, Finland, Germany, Latvia, Lithuania and Poland. The EUSBSR implementation is coordinated in close contact with the European Commission and all relevant stakeholders, i.e. other member states, regional and local authorities, inter-governmental and non-governmental bodies. The strategy is also welcoming cooperation with EU neighbouring countries (Iceland and Norway).

The CBSS Civil Protection Network brings together the Director Generals from the Baltic Sea States to exchange latest developments and challenges and agree on the most important issues which should be tackled together. The Civil Protection Network provides a unique platform for Director Generals in the Baltic Sea Region to work together – it is the only place where experts from EU countries meet their peers from Iceland and Norway.

Jointly led by the CBSS and the Swedish Civil Contingencies Agency (MSB), Policy Area Secure focuses on the management and prevention of natural disasters, man-made disasters and organized crime. As co-coordinators, they facilitate regional dialogue between experts, government agencies, NGOs, businesses and research institutions specialising in civil security. Most of the threats to the Baltic Sea Region are of a transboundary nature, so it is very important that civil security agencies from different countries communicate with each other, learn from each other and work well together when a disaster strikes.

3.4. EU STRATEGY FOR THE ADRIATIC AND IONIAN REGION (EUSAIR)

The EU Strategy for the Adriatic and Ionian Region (EUSAIR) is a macro-regional strategy adopted by the European Commission in 2014, that aims to promote economic and social prosperity and growth in the region by improving its attractiveness, competitiveness and connectivity. It covers ten countries: four EU Member States (Croatia, Greece, Italy, Slovenia) and six non-EU countries (Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, San Marino, Serbia) and aims to contribute to the further integration of

the Western Balkans. The strategy focuses on four thematic areas: blue growth, connectivity, environmental quality, and sustainable tourism.

3.5. EU STRATEGY FOR THE ALPINE REGION (EUSALP)

The Alpine region is composed of territories with diverse demographics, economies, and cultures, which calls for cooperation. The EU-Strategy for the Alpine Region (EUSALP) aims at improving cross-border cooperation between the regions and states in the Alpine area, and identifying common goals to tackle the challenges of living and working spaces and tourist destination. The EUSALP promotes the Alpine Region as a unique example of a bottom-up strategy initiated by the people and supported by the states and regions. It aims to ensure mutually beneficial interaction between the mountain regions at its core and the surrounding lowland and urban areas, and to flexibly take into account the functional relationships between these areas. This Strategy concerns 7 Countries, of which 5 are EU Member States (Austria, France, Germany, Italy and Slovenia) and 2 non-EU countries (Liechtenstein and Switzerland), and in total 48 Regions.

3.6. EU FLOODS DIRECTIVE

EU Floods Directive was adopted in 2007 and is designed to reduce the risk of flooding to people and property in the EU. The Floods Directive establishes a common approach to flood risk assessment and management across the EU and requires member states to identify flood risk areas and to develop flood risk management plans to address these risks.

The EU has also developed the Floods Alert System (FLOODS-ALERT), which is a web-based platform that provides real-time information about flood events in the EU. The system is designed to help authorities and emergency services respond more quickly and effectively to flooding, and to provide information to the public about flood risks and how to stay safe.

In addition to these specific frameworks and strategies, the EU also has several broader policies and initiatives that address flood protection and risk management, including the Water Framework Directive, the EU Biodiversity Strategy, and the EU Adaptation Strategy. These initiatives aim to promote sustainable water management and increase the resilience of communities and ecosystems to the impacts of flooding and other environmental hazards.

3.7. INTERNATIONAL COMMISSION FOR THE PROTECTION OF THE DANUBE RIVER (ICPDR)

ICPDR works to ensure the sustainable and equitable use of waters in the Danube River Basin. The work of the ICPDR is based on the Danube River Protection Convention (DRPC), the major legal instrument for cooperation and transboundary water management in the Danube River Basin. The ICPDR has 15 contracting parties: the European Union and 14 countries which share a significant part (>2000km^2) of the Danube River Basin, including Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia, and Ukraine.

In 2000, the ICPDR contracting parties nominated the ICPDR as the platform for the implementation of all transboundary aspects of the EU Water Framework Directive (WFD). The successful implementation of the WFD is therefore clearly high on the political agendas of the countries of the Danube River Basin District. In 2007, the ICPDR also took responsibility for coordinating the implementation of the EU Floods Directive within the Danube River Basin.

The key objectives of the ICPDR and the DRPC include the following aims to:

- Ensure sustainable water management
- Ensure conservation, improvement and rational use of surface waters and groundwater
- Control pollution and reduce inputs of nutrients and hazardous substances
- Control floods and ice hazards.

To achieve these objectives, the ICPDR works on a range of issues, including water quality monitoring and assessment, flood risk management, river basin management, assessment of pressures and developing programme of measures, groundwater management, Hydromorphology issues, accident prevention and control and public outreach.

In the field of disaster management, the scope of the ICPDR includes flood risk management and accident prevention and control.

The Danube Flood Risk Management Plan addresses various aspects of flood risk management focusing on prevention, protection and preparedness, including measures for achieving the established objectives and calls for solidarity among all ICPDR Contracting Parties.

An integral part of the ICPDR flood risk management is the Danube Flood Forecasting and Warning System (DFFWS), which is a regional network of flood forecasting and warning centres, coordinated by the EC JRC in cooperation with ICPDR. The DFFWS intends to improve flood forecasting and warning in the Danube region by sharing data and expertise among the participating countries, and by developing and implementing common flood forecasting and warning procedures.

The Danube Accident Emergency Warning System (AEWS) is activated whenever there is a risk of transboundary water pollution, or threshold danger levels of hazardous substances are exceeded. The AEWS sends out international warning messages to countries downstream. This helps the authorities to put environmental protection and public safety measures into action.

Accidental pollution incidents in the Danube River Basin can cause widespread damage to the environment and endanger the health of local people and the state of local economies downstream. This was exemplified by the effects of the Baia Mare and Baia Borsa mine waste spills in Romania in 2000 or at the Ajka red sludge spill in 2010. The ICPDR is working to prevent accidental pollution and to improve response capability by listing all relevant “Accident Risk Spots” in inventories, and by providing two tools to lessen the related risks: **(i)** Recommendations on guidelines for the Danube states to improve the standard of safety measures at risk sites and **(ii)** Checklists to help controlling technical safety levels at Accident Risk Spots.

3.8. SENDAI FRAMEWORK

The Sendai Framework for Disaster Risk Reduction 2015-2030 is a non-binding agreement adopted by the United Nations General Assembly in March 2015. It is the successor to the Hyogo Framework for Action 2005-2015 and provides a global framework for the reduction of disaster risk and loss of lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries. The framework has four priority areas: Understanding disaster risk; Strengthening disaster risk governance to manage disaster risk; Investing in disaster risk reduction for resilience; and Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.

The Sendai Framework works hand in hand with the other 2030 Agenda agreements, including The Paris Agreement on Climate Change, The Addis Ababa Action Agenda on Financing for Development, the New Urban Agenda, and ultimately the Sustainable Development Goals.

It was endorsed by the UN General Assembly following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR), and advocates for:

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

It recognizes that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders.

National disaster management ecosystems of the Danube River Region

A national disaster management ecosystem is the network of organizations, systems, and processes that a country has in place to manage the risks associated with disasters and emergencies. This typically involves a number of different actors, including government agencies, non-governmental organizations (NGOs), international organizations, and local communities. These actors work together to identify and assess disaster risks, to develop and implement risk reduction measures, and to respond to and recover from disasters and emergencies when they occur.

The national disaster management ecosystem is typically coordinated by a central body or agency, which is responsible for overseeing the overall management of disaster risks in the country. This central agency works closely with other agencies and organisations, both within and outside government, to ensure that the country is prepared for any type of disaster or emergency.

The following sections provide a high-level overview of the national disaster management systems of the different countries in the Danube Region. Due to the complexity and dynamic nature of these systems, the overview will only address the most important features per country. A more detailed description of the different country systems can be found under https://disastermanagement-danube.net/countries-organizations .

AUSTRIA

The Federal Ministry of the Interior is responsible for the coordination of National Crisis Management and National Disaster Management, Crisis Response, International Disaster Relief and Civil Protection.

Department II/ORK/10 – Crisis Management, Situation Information and Control Centre Matters within the Ministry of the Interior is responsible for

- Civil Protection,
- the coordination of National Crisis and Disaster Management (SKKM),
- International Civil Protection and Disaster Relief,
- Federal Alarm Centre and Federal Warning and Alarm System,
- Basic and Advanced education and training within disaster management.
- National Crisis and Disaster Management (SKKM)

Combating, eliminating or mitigating the effects of imminent disasters or disasters that already occurred (disaster relief, preparedness) falls mainly within the responsibility of the Federal provinces in Austria. The disaster relief acts of the Federal provinces, which primarily define the declaration of a disaster and the command and control structure in the municipalities, districts and Federal provinces form the legal basis.

BOSNIA-HERZEGOVINA

The disaster management and flood protection system of Bosnia and Herzegovina is coordinated by the Federal Civil Protection Administration and the Civil Protection Administration of the Republika Srpska, depending on the territory. These organizations are responsible for managing and coordinating emergency response and recovery efforts in the country. They rely on a combination of professional emergency responders and trained volunteers to carry out their mission.

BULGARIA

The disaster management system in Bulgaria is organized and coordinated by the National Crisis Management Centre (NCMC), which is part of the Ministry of Interior. The NCMC is responsible for the prevention, preparedness, response, and recovery efforts related to disasters and emergencies in the country.

The Regional Governors organise and manage the disaster management in the region, assisted by Regional Disaster Risk Reduction Councils.

Voluntary formations established at municipal level are under the direct authority of the mayor. They are created on a territorial basis and make an integral part of the Unified Rescue System.

CROATIA

The Government of Croatia manages the activities of the civil protection members operating in disasters, with the support of the Civil Protection Headquarters.

Measures and activities in the civil protection system are implemented by the following participants:

- the Government of the Republic of Croatia
- the Ministry of the Interior, as the central state body competent for civil protection activities
- state administration bodies and other government authorities
- armed forces of the Republic of Croatia and the police
- units of local and county (regional) self-government.

Disaster risk reduction (DRR) activities fall within the competence of individual ministries, which are all represented within and coordinated by the Croatian national platform for disaster risk reduction. The Platform's work is administered by the Ministry of the Interior of the Republic of Croatia, Civil Protection Directorate.

CZECH REPUBLIC

The Ministry of the Interior is responsible for coordinating disaster management efforts at the national level. The main agency responsible for implementing disaster management measures at the operational level is the Integrated Rescue System (IRS), which is a network of organizations and agencies that includes the fire service, the police, the ambulance service, and other specialized rescue and emergency response units.

In the Czech Republic, the volunteer system for disaster management is coordinated by the IRS.

GERMANY

The German disaster management system is organized at the federal, state, and local levels. The Federal Ministry of the Interior and Community is responsible for overall coordination of disaster management activities at the federal level, while the individual states (or "Länder") are responsible for managing emergencies within their own borders.

At the federal level, the German government has several specialized agencies and organizations that play key roles in disaster management. For example, the Federal Office of Civil Protection and Disaster Assistance (BBK) is responsible for coordinating civil protection measures and providing assistance to the states in the event of an emergency. The Federal Agency for Technical Relief (THW) with its voluntary basis is responsible for providing technical and logistical support to disaster response efforts, such as search and rescue operations and emergency infrastructure repair.

HUNGARY

The Ministry of Interior is responsible for coordinating disaster management efforts at the national level. The main agency responsible for implementing disaster management measures at the operational level is the National Directorate General for Disaster Management (NDGDM) which is responsible for developing and implementing disaster preparedness and response plans, providing support to affected communities, and coordinating the deployment of rescue and relief personnel and resources.

In case of emergency, national or territorial defence committees coordinate the overall response activities with the involvement of relevant organizations.

Integrating volunteers in disaster management activities was also one of the goals set for NDGDM in order to increase the efficiency of interventions and its ability to respond. Municipal volunteer rescue organisations with around 6,000 members were set up and began to operate in more than 400 settlements, hence increasing the number of volunteers in the country to 13,000. Rescue organisations trained to intervene independently mostly take part in technical rescue activities during heavy rain and storms and searches for missing persons.

Defence and security administration in Hungary is the centrally coordinated planning, implementation and command activity of state bodies established under the direction of the Government or designated by law for such tasks to counter threats and attacks against Hungary and its population, in particular with regard to the management of crisis situations, the promulgation of special legislation and tasks related to and preparation for the enhancement of civil and state defence and security awareness, including the defence administration and the military administration forming part of it, as well as the administration of related law enforcement agencies.

MOLDOVA

In Moldova, the disaster management is coordinated by the Ministry of Internal Affairs (MIA) through the Emergency Situations and Civil Protection Service (ESCPS). The ESCPS is responsible for managing and coordinating emergency response and recovery efforts in the country. It relies on a combination of professional emergency responders, trained volunteers, and specialized agencies to carry out its mission.

MONTENEGRO

In Montenegro, the disaster management is coordinated by the Directorate for Emergency Management (DEM), which is a part of the Ministry of Interior. The DEM is responsible for managing and coordinating emergency response and recovery efforts in the country. It relies on a combination of professional emergency responders, trained volunteers, and specialized agencies to carry out its mission.

SERBIA

The Ministry of Interior is responsible for coordinating disaster management efforts at the national level, and the Serbian Armed Forces also play a role in disaster response. The main agency responsible for implementing disaster management measures at the operational level is the Sector for Emergency Management (SEM), which is responsible for developing and implementing disaster preparedness and response plans, providing support to affected communities, and coordinating the deployment of rescue and relief personnel and resources.

SLOVAKIA

Crisis management system in the Slovak Republic is divided geographically, with each level of public administration playing its part in the system. The Ministry of Interior of the Slovak Republic cooperates with other state authorities, self-governing regions, municipalities, legal entities, individuals and with public-legal institutions with the humanitarian mission that in case of emergency are deployed in rescue operations.

Regional departments of civil protection and crisis management (at the district offices) plan, manage, and provide the activities relative to the protection of civil population in the case of an emergency.

In the Slovak Republic, the volunteer system for disaster management is coordinated by the Ministry of Interior, through the State Fire and Rescue Service (SFRS). The SFRS is responsible for managing and coordinating emergency response and recovery efforts in the country. These organizations have their own recruitment, training and equipping process, but are closely supervised and in coordination with the SFRS through the Ministry of Interior.

SLOVENIA

Disaster management (civil protection) in Slovenia is organised as an integrated system, which includes various parties: rescue units and services (professional and voluntary, civil protection), humanitarian organisations, research institutions, other organisations and governmental administrative bodies.

The responsibilities for the disaster management system lie with the government, local communities, commercial companies, and citizens. The system is based on a bottom-up approach and systematic (subsidiary) principle.

The national authority responsible for disaster management is the Administration of the Republic of Slovenia for Civil Protection and Disaster Relief (ACPDR) within the Ministry of Defence.

ACPDR carries out administrative and expert tasks regarding protection, rescue and disaster relief. ACPDR leads, coordinates and implements the international activities in the field of disaster management at bilateral, regional, EU and multilateral levels.

ROMANIA

A central role in the system is played by the Ministry of Internal Affairs and its subordinated structure, the General Inspectorate for Emergency Situations (GIES) under the Department of Emergency Situations (DES). MoIA plays lead role in emergency situations including developing policies, and centralizing assessments per legislation under the responsibility of other line ministries.

At national level, the National Committee for Emergency Situations – CNSU (inter-institutional body), is responsible for emergency management. The CNSU is headed by the Prime Minister and is composed of ministers and directors of central public institutions.

At strategic level, the Department for Emergency Situation (DES) has coordinating powers for prevention and management of emergencies, ensuring and coordinating the human, material, financial and other resources necessary to cope with emergencies, including qualified first aid and emergency medical assistance within emergency units and emergency compartments.

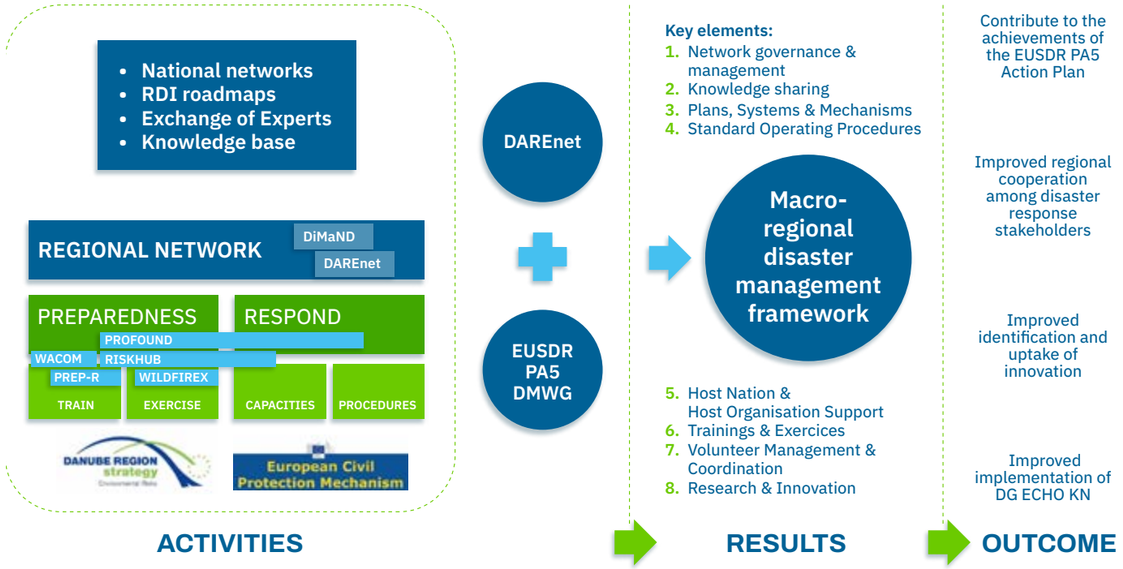
The General Inspectorate for Emergency Situations (GIES) as integrator of the National Emergency Management System, ensure the integrated coordination of all prevention activities and emergency situations management and also works as national point of contact for all relevant international governmental and non-governmental organisations.

UKRAINE

In Ukraine, the disaster management is coordinated by the State Emergency Service of Ukraine (SESU), which is a part of the Ministry of Interior. The SESU is responsible for managing and coordinating emergency response and recovery efforts in the country. It relies on a combination of professional emergency responders, trained volunteers, and specialized agencies to carry out its mission.

5 Cooperation activities, key projects and results in the Danube Region

Overview of the collaboration of key projects towards a macro-regional framework



The figure above shows individual and cooperation activities between DAREnet, EUSDR PA5 DMWG and other projects that led to this report. The following overview of their activities demonstrates potential collaboration opportunities.

5.1. EUSDR PA5 DISASTER MANAGEMENT WORKING GROUP

Expanding cooperation and joint efforts among the countries of the Danube Region offers the opportunity to reach a common understanding and develop standards for the management of environmental risks. The development of recommendations for the involvement of civil protection organisations and fire and rescue services involved in disaster management would promote standardised response activities.

The Disaster Management Working Group (DMWG) was established to concentrate on emergency response and preparedness elements of managing environmental risks which are in the scope of EUSDR PA5.

The implementation of Action 3 of PA5 from EUSDR Action Plan is the main aim of the DM-WG.

Action 3: Strengthen disaster prevention and preparedness among governmental and non-governmental organizations

- Support joint preparedness activities (e.g. regional exercises, joint training activities, sharing know-how, standardization of capacities) of disaster response actors (professional and volunteer, at operational, tactical and strategic level);
- Harmonized training and capacity building of civil protection units (based on European Union Civil Protection Mechanism) to improve coordination, interoperability, procedures and self-sufficiency;
- Support disaster risk reduction at regional and local level, raising public awareness;
- Innovation and technology to support disaster response (VR, drone, IT solutions, mapping).

The objectives of EUSDR PA5 DM-WG are the following:

- providing a platform for cooperation between relevant stakeholders of the 14 Danube countries in the field of disaster management;
- cooperating with International Commission for the Protection of Danube River in all activities concerning water management to achieve good synergy and to contribute to their work with disaster response viewpoint;
- supporting the European Union Civil Protection Mechanism (DG ECHO) in cross-border and regional level disaster management with the involvement of authorities and (volunteer) non-governmental organizations;
- triggering discussions and activities concerning disaster preparedness and response elements in the management of environmental risks;
- working on the development of recommendations for volunteer organizations involved in disaster response in the Region;
- supporting this initiative at policy level by developing “Minimum standards for civil protection organizations and fire and rescue services involved in international or cross-border disaster response in the Danube Region”;
- identifying existing practices and procedures to minimize duplications;
- organizing and financing DM WG meeting minimum once per year.

In order to reach those objectives, three documents were developed, the Rules of Procedures to regulate the governing of the working group, the Terms of Reference to clarify the responsibilities and objectives of the network, and the Roadmap of Actions, which is a rolling document and it include milestones to follow and deadlines to reach.

5.2. KEY PROJECTS

DARENET

DAREnet (Danube River Region Resilience Exchange Network) supported flood management practitioners across the EU Danube River region to deepen and broaden their Research, Development, and Innovation (RDI) related collaboration. The project was financed by the EU Horizon2020 program. DAREnet built a multi-disciplinary community of practitioners, operating in a network of civil protection organizations, and supported by a broad range of stakeholders from policy, industry, and research to foster synergies, innovation, and its uptake.

DAREnet was organized as a network of national practitioner networks, led by dedicated DAREnet National Contacts (DNC). The DNCs were building in their countries multi-disciplinary practitioner communities to collect information about innovation needs and opportunities in an ongoing dialogue. The project goal was to unite these national communities in an open ecosystem to foster synergies, innovation, and its uptake across the Danube Region.

DAREnet presented a regularly updated RDI Roadmap that highlighted promising innovation opportunities to cope with the main challenges in the region and improve flood resilience in the future. It provided concrete perspectives for further development, industrialization, and uptake of innovations of highest relevance for practitioners, and layed the basis for concrete innovation initiatives, practitioner-driven and “bottom-up”. This joint innovation strategy was being laid down in the DAREnet RDI Roadmap. In the course of the project, there were 4 road mapping cycles. The cycles had different thematic focus (eg. training).

All DAREnet roadmapping cycles consisted of 5 major steps: [1] collecting bottom-up and specifying practitioner challenges related to flood events and [2] identifying relevant solutions (e.g. deriving from research and innovation results) to address these challenges. Based on this, [3] prioritising innovation opportunities (including assessment against several factors) that seem most promising for practitioners and [4] translating them into the DAREnet RDI Roadmap. Finally DAREnet [5] launched Calls for Initiatives based on the RDI Roadmap, i.e. practitioners had the opportunity to sketch their initiatives in short concept papers. After evaluation of these papers the “applicants” received advise on how they could realise their concepts.

Danube Flood Resilience Exchange of Experts Programme Concept Objectives

1. Facilitate knowledge transfer between stakeholders across the Danube River region.
2. Identify best practices, needs and innovation opportunities.
3. Work towards the establishment of a regional level cooperation framework for disaster response.
4. Contribute to the achievement of the actions of Environmental Risks Priority Area listed in the Action Plan of the EU Strategy for the Danube Region.
5. Contribute to the further development of the Union Civil Protection Mechanism.

Topics of the exchange were volunteer management, Forecasting and Warning, Exercises and Regional cooperation. Their connection to the Action Plan of EU Strategy for the Danube Region Environmental Risks Priority Area were the following:

DAREnet drew upon synergies with the modules and facilities of the UCPM and the regional strategies for flood prevention and risk management of the ICPDR and EUSDR.

DIMAND

DiMaND project activities supported disaster preparedness and risk management actors that promote and facilitate the development, dissemination and exchange of knowledge, best practises and expertise to support new partnerships in disaster preparedness and risk management and consolidate existing partnerships that enhance cooperation and synergies in prevention, preparedness and response.

The project directly supported the implementation of EUSDR PA5, which aimed to develop cooperation between disaster management actors to improve the effectiveness of disaster preparedness and response at the regional level. The main objective of DiMaND was to support this initiative and strengthen the disaster management network by promoting the network of governmental and non-governmental disaster management organisations in the Danube Region.

By strengthening the cooperation between the volunteer and professional (public) civil protection services, the interoperability of the available assets were improved.

Thanks to the funding received from the EU, experts of the project were working on identifying good practices in preparedness and response activities, and also in humanitarian coordination and Host Nation Support.

The objectives of DiMaND werestrongly connected to the Sendai Framework, as they are directly focusing on activities, which support most of its priorities:

- "Understanding disaster risk" by focusing on policies and practices and promoting common efforts in partnership with the technological community
- "Strengthening of disaster risk governance to manage disaster risk" by fostering collaboration across regional mechanisms and promoting mutual learning and exchange of good practices and information
- "Enhancing disaster preparedness for effective response (…) " by developing and strengthening coordinated regional approaches and operational mechanisms to prepare for and ensure rapid and effective disaster response in situations that exceed national coping capacities, also promoting the further development and dissemination of instruments.

An important result was the development of Rules and Procedures, Terms of Reference and Roadmap of Actions of the EUSDR PA5 DM-WG.

DiMaND partners organized a series of expert discussions during the course of the project. The focus areas were on preparedness and response practices, also on volunteer management and the role of municipalities in Host Nation Support. The details of the events and the discussions are elaborated in the project's deliverables as well in a form of infographics.

In the field of preparedness, enabling cooperation has utmost importance and can be achieved by

- providing platform to connect different stakeholders, experts, scholars, non-governmental organizations and authorities;
- support building of potential partnerships and facilitate funding;

Harmonization is encouraged by

- collecting and sharing best practices and develop e-learning platform available in national languages;
- support the development of minimum standards providing recommendations.

In trainings and exercises the areas were defined which needs improvement. It was identified that training opportunities need to be widened by

- joint training possibilities for professional and volunteer units;
- international training opportunities avoiding waiting lists or language barriers;
- regular and systematic exercises annually, in cooperation with local and regional organizations;
- exercise methods and techniques adapted to all circumstances (e.g. COVID-19);
- transnational or international availability of training facilities;
- specialized training centres, exercise grounds and learning programmes;
- use of Training of Trainers methodology;

The standardization of procedures and evaluation was another cornerstone in this area:

- Standard Operating Procedures established for exercise organisers;
- supervision and evaluation of volunteer exercises;
- standard evaluation processes to enable comparison between exercises;
- certification available at regional level.

In the area of capacity building, improvement is achieved through:

- better volunteer management in terms of recruitment, HR and supporting functions;
- Structural funding to sustain acquired personnel, equipment and knowledge beyond project life cycles;
- Interoperability ensured by a network of experts, improved protocols and standards.

Supporting innovation can be enabled by:

- the use of new technologies in training and during deployment.
- connecting existing training facilities and seek funding opportunities for new ones;
- improved IT competence and expertise among practitioners (IT solutions, GIS);
- more realistic and complex virtual models of disaster events, employing Artificial Intelligence.

In Host Nation Support, a number of good practices and challenges were identified, such as:

- Standardized information management tools, appointed contact persons and liaison officers are needed for effective HNS activities supporting cross-border and macro-regional disaster response.
- Bottom-up approach proved to be successful and pre-existing links between countries and organizations can be exploited well.
- Problems derived from different national structures and overcome complicated administrative procedures are challenging.

PROFOUND

The PROFOUND (Procedures of Rescue Organizations in Flood Operations Unified in the Danube Region) Exercise project was aimed to improve the cooperation of flood response NGOs in Hungary, Slovakia and Romania, and also their neighbouring countries in the Danube Region. Thanks to the funding received from the EU, participating organizations had the opportunity to establish a common framework for capacity building and trainings, to improve their Standard Operating Procedures, and to deploy in synergy with the European Union Civil Protection Mechanism.

The full-scale field exercise was designed to test macro-regional flood response at multiple locations by simulating the escalation of the scenario from local through cross-border to regional/EU level. Exercise scenarios were developed to recreate the complexity of real-life emergency situations based on former events and the identification of local risks and hazards along the Danube, Tisa and Somes Rivers.

During the two-year project, several online and offline planning meetings, different workshops and trainings were organized by the implementing partners between February 2021 and August 2022. With the inclusion of civil protection experts all key personnel of the partner organizations received e-learning and live trainings to have a better understanding of the EU Civil Protection Mechanism (UCPM).

The development of a dedicated volunteer management application allowed organisers to directly reach, guide and also receive feedback from their volunteers at any time of the day.

At the Way forward and Evaluation seminar, representatives of participating teams and members of the exercise control team (EXCON) discussed lessons learnt based on their own experiences and results of the evaluation process forming a clear vision of the necessary steps towards a more effective flood response and adaptation of SOPs for flood response organizations in the Danube Region.

Their key findings about the possibilities of future cooperation were:

- There are many experienced rescue divers in the Danube Region, and this knowledge should be shared with all the rescue community in the region through common training and exercising;
- There is still no internationally agreed minimum standard for rescue diving;
- With the support of DG ECHO should initiate an EU wide discussion on the requirements for the rescue divers to develop a common system at least for the minimum standards;
- Development of a common communication platform;
- Establishment of training with experts;
- Capacity building to reach the minimum standards of international deployments;
- Increasing the awareness and implement procedures in safety and security.
- There is a need for joining exercises within the region;
- Exchange of knowledge to Exchange of Experts programmes;
- HNS should provide trained interpreters to the foreign teams;
- Development of standard operating procedures for deployment withing the Danube
- Region;
- Development of minimum standards, training and knowledge exchange for rescue divers, and water rescue with boats

Insights from macro-regional approaches to disaster management - good practices, common challenges and lessons learned

Disaster management is a crucial aspect of ensuring the well-being and safety of communities. It involves a comprehensive approach to minimize the impact of disasters and ensure an effective response. To achieve this goal, it is essential to understand the best practices, common challenges, and lessons learned from macro-regional disaster management activities and international frameworks. By gaining insights into these key elements, one can enhance the effectiveness of disaster management efforts and ensure a more resilient and prepared response to future crises. In this section, we will delve into the importance of gaining these insights and how they can inform and improve disaster management strategies.

Monitoring framework activities, reviewing policies, conducting a stakeholder analysis, comparing with regional frameworks and seeking feedback from experts and stakeholders helped to identify areas of the framework that need improvement.

The EUSDR PA5 DMWG and the Policy Area Secure of EUSBSR are two different regional cooperation frameworks with different focuses and priorities.

DMWG is focused on the field of disaster management, as part of the Environmental Risks Priority Area (PA5), while PA Secure is focused on a broader range of issues, including capacity building and people-to-people contacts, engaging youth and volunteers in DRR, tailoring Sendai Framework for DRR for the Baltic Sea Region, engaging with researchers in societal security, etc.

DMWG is a relatively new framework compared to PA Secure, and it may face challenges in terms of building the necessary institutions, procedures and mechanisms to effectively achieve its goal.

Both DMWG and PA Secure face their own unique set of needs in their further development, however, they share common challenges such as limited resources, limited capacity, and the requirement of a complex decision-making process.

The following **good practices from the Danube and Baltic Sea Region** can be highlighted. The macro-regional frameworks:

1. Promote cross-border cooperation between participating countries to address common challenges and opportunities in the region.
2. Enable the formation of partnerships and networks between organizations and institutions from different countries to share knowledge and experience and to jointly implement projects.
3. Apply an integrated and holistic approach to address the challenges and opportunities in the region, considering the economic, social, and environmental dimensions of the issues.
4. Engage stakeholders, such as local authorities, businesses, and civil society organizations, are involved in the design and implementation of projects to ensure that they are responsive to the needs and priorities of the communities they serve.
5. Support the development of the capacity of organisations and institutions in the region to implement projects and cooperate across borders.
6. Facilitate the evaluation and monitoring to ensure that projects achieve their objectives and to provide information for the development of future projects.
7. Leveraging other funding sources, such as national and regional funds, to maximise the impact of projects and promote sustainability.
8. Promote the development of innovative solutions and the exchange of best practises among participating countries to address common challenges and opportunities.

Macro-regional cooperation frameworks in the field of disaster management can be effective in improving the preparedness and response to disasters, however, **gaps and needs were identified that need to be addressed** for these frameworks to be effective. These are:

1. Limited participation: Some countries or organizations may not participate in regional cooperation frameworks, which can limit the effectiveness of the framework in addressing regional disaster risks.
2. Lack of standardization: Different countries or organizations may have different approaches, standards, and practices in disaster management, which can make it difficult to coordinate and cooperate effectively.
3. Limited capacity: Some countries or organizations may not have the resources, expertise, or capacity to effectively participate in regional cooperation frameworks.
4. Limited funding: Regional cooperation frameworks may rely on funding from a limited number of sources, which may not be sustainable in the long term.
5. Limited communication: Communication gaps between participating countries and organizations can make it difficult to share information and coordinate efforts effectively.
6. Limited political will: Cooperation can be hindered by lack of political will to collaborate, due to geopolitical or strategic reasons.
7. Inconsistency with national legal frameworks: Some regional cooperation agreements may not be consistent with the national legal frameworks of participating countries, which can limit their effectiveness.
8. Lack of evaluation and monitoring: Some regional cooperation frameworks may lack effective mechanisms for monitoring and evaluating the effectiveness of the cooperation, which can make it difficult to improve and adapt the framework in response to changing needs.

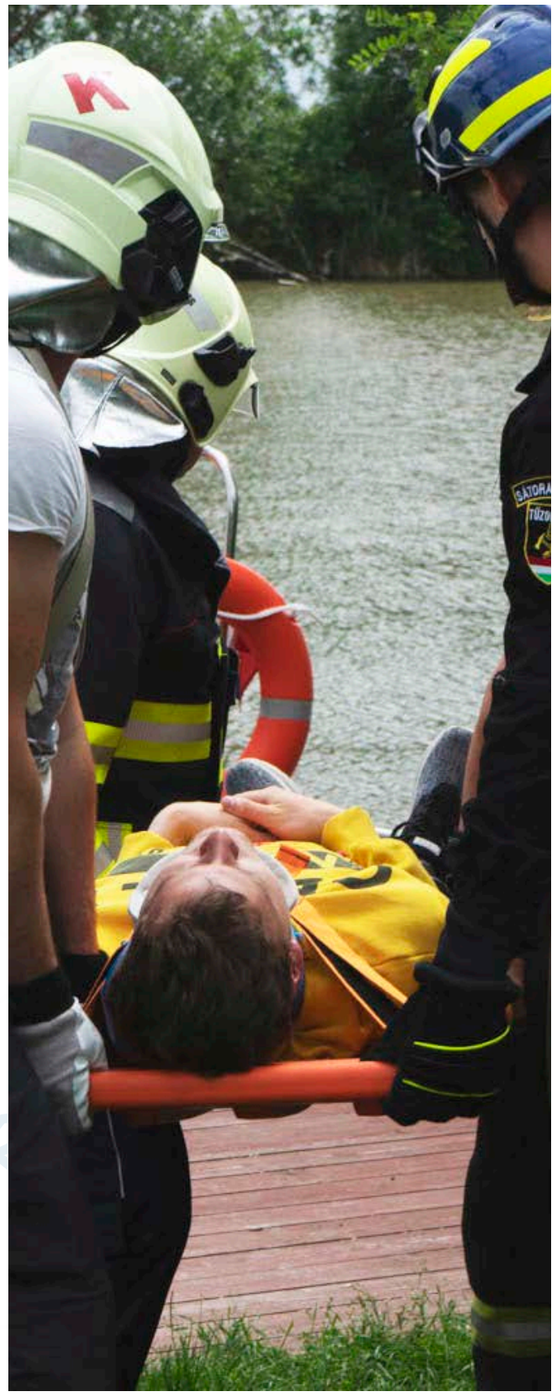
The UCPM is an EU-wide framework for civil protection cooperation and assistance which is based on the principles of solidarity and shared responsibility. Some ways a **Danube macro-regional disaster management framework could complement the UCPM** is by:

- Providing a more detailed understanding of the specific disaster risks and vulnerabilities in the Danube Region: The Danube Region has its specific geographical and climatic characteristics, that may differ from the rest of EU. Therefore, a macro regional framework could provide a more detailed understanding of the disaster risks and vulnerabilities in the region, which would help to inform and guide the development of more effective risk reduction and response strategies.
- Facilitating regional cooperation and coordination: A Danube Regional disaster management framework could help to improve the coordination and cooperation among the countries in the region, which would make the response to disasters more efficient and effective.
- Focusing on specific hazards and vulnerabilities: Danube region may have specific hazards like floods, droughts or specific infrastructure challenges that a macro regional framework can focus on and provide targeted response mechanisms that the EU-wide framework may not cover.

To **avoid duplications**, a Danube macro-regional disaster management framework should:

- Follow the EU guidelines and recommendations: The framework should follow the EU guidelines and recommendations and be consistent with the EU legal and policy framework in the area of civil protection.
- Coordinate with EU mechanisms: The framework should coordinate closely with the EU mechanisms, such as the UCPM, to ensure that the response efforts in the region are complementary and not duplicative.
- Build on existing national and regional mechanisms: The framework should build on existing national and regional mechanisms, rather than replicating them, to ensure that resources are used efficiently and effectively.
- Regularly review and evaluate: It is important to regularly review and evaluate the framework and its activities to identify successes, challenges and opportunities for improvement.

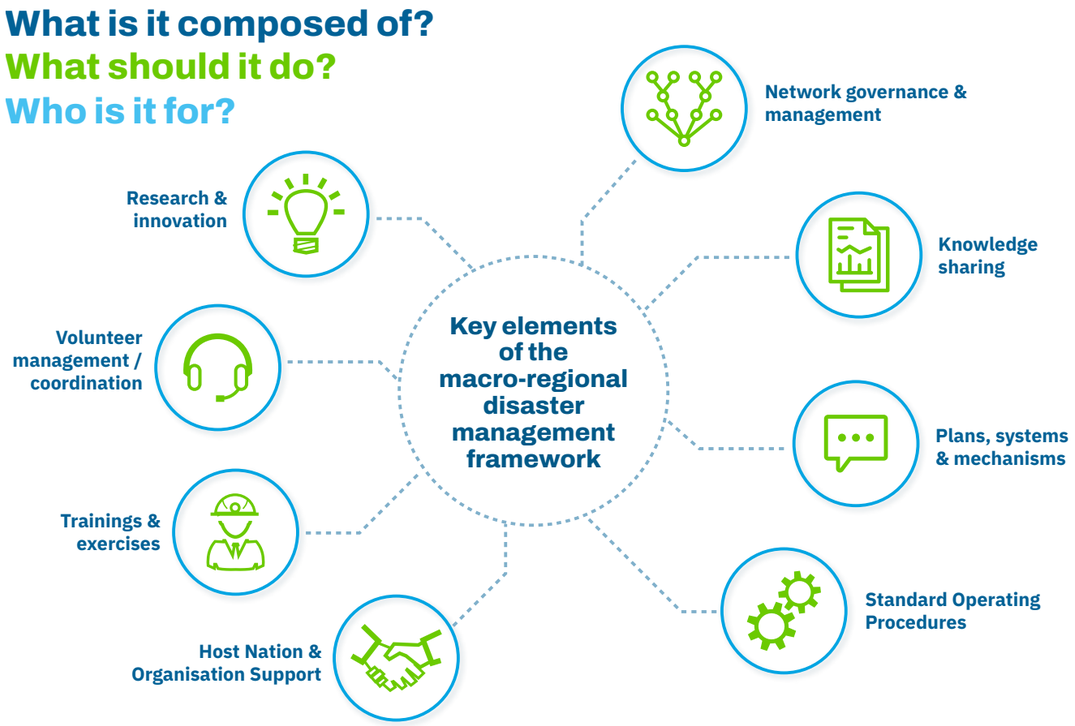
By following these principles, a Danube Regional disaster management framework could effectively complement the UCPM and other existing frameworks, and make the response to disasters in the region more efficient and effective.



Key elements and pillars of the envisioned framework

7

The proposed solution to the identified areas would be the adoption of the following elements, which will enable the existing framework in the Danube Region to be strengthened. This will help ensure that the framework provides current and future participating experts, professionals and volunteers representing stakeholder organisations with solutions to develop their skills, strengthen their connections and enable them to better understand their colleagues at their regional partner organisations.



Network governance and management

The DiMaND project had 18 partners from 8 countries, while the DAREnet consortium had 15 partner organizations with dozens of experts taking part in their workshops, the Profound exercise project had 4 main partners from 4 countries, with 473 responders participating representing 37 organizations from 9 countries at the field exercise in Hungary. In order to ensure continuity of these extensive, but project based networks, the EUSDR PA5 established the working group of disaster management organizations. Some partners from DAREnet project became members of this group, and it also served as a pool for the partnerships of other projects, such as DiMaND and PROFOUND. The roles and responsibilities of the members was developed and commonly agreed as part of the Terms of Reference of EUSDR PA5 DMWG.

To maintain and keep informed such a large network, contacts and an up-to-date list of entities was needed. The technical framework for such a list is available at the portal of DiMaND. It was also important to have a coordinator for the network, and to take into account the resources needed to manage these contacts and to keep network information updated.

Plans, systems and mechanisms

1. Risk and vulnerability assessments: A comprehensive understanding of flood risks and vulnerabilities is essential for effective flood prevention and disaster management. Regional disaster management frameworks should include regular risk and vulnerability assessments to guide the development of strategies and measures to reduce risks and protect communities.
2. Early warning and forecasting systems: Early warning and forecasting systems are critical for effective flood prevention and disaster management. Regional disaster management frameworks should include the development and maintenance of early warning systems that are integrated across the region and that can effectively predict and provide warning of flood events.
3. Hazard and risk management plans: Regional disaster management frameworks should include the development of hazard and risk management plans that are based on the results of risk and vulnerability assessments. These plans should include specific measures and strategies to reduce risks and vulnerabilities and to prepare for and respond to flood events. A practical example is the Danube Flood Risk Management Plan developed by the ICPDR.
4. Emergency preparedness and response plans: Regional disaster management frameworks should include the development of emergency preparedness and response plans that are based on hazard and risk management plans. These plans should include specific measures and strategies to prepare for and respond to flood events, including procedures for activating emergency response mechanisms, and guidelines for evacuating populations.
5. Coordination and communication plan: Effective coordination and communication are essential for effective flood prevention and disaster management. Regional disaster management frameworks should include the development of mechanisms for sharing information, coordinating activities, and ensuring that response efforts are integrated across the region.
6. Joint strategy and action plan: A joint strategy and action plan is needed to guide the development and implementation of flood prevention and disaster management measures. This should be based on the results of the risk and vulnerability assessments and should include specific objectives, targets, and action items.
7. Information-sharing mechanisms: Establishing effective information-sharing mechanisms, such as early warning systems and emergency communication systems, is crucial for effective flood prevention and disaster management.

Knowledge sharing

The macro-regional activities have put emphasis not only on practice and networking, but on sharing the existing knowledge as well. It was achieved via training of trainers and exchange of experts activities, as well as using online tools and sharing results of projects.

The events and programs allowed participating experts to learn from their peers via vising their home bases trough the **exchange of experts** programme. **Training of trainers** proved to be a sufficient and sustainable way of training, as it allowed key personnel to continue the preparedness activities.

In order to ensure sustainability during the years of COVID-19, the project partners also created e-learning materials in different languages, and also started the development of common terminology. When in-person courses were possible again, the e-learning training remained as an entry requirement, as it proved to be successful in delivering basic knowledge in any given topic.

The development of a **glossary of terms** was needed in order to have a common understanding. It could be achieved through collection and translation of existing terminology to the languages of countries, so they could be compatible with each other. It greatly improved the interoperability and communication between the different nationalities. It was also important to ensure the reachability and availability of the terms for every practitioner.

Sharing the online assets via a knowledge portal was considered as a key pillar of the framework. An initial glossary of terms (with a built in search engine) relevant to international disaster response, as well as **reports**, **studies** and **project results** were shared via the portal of DiMaND.

Standard Operating Procedures

Activities geared towards the goal of bringing all regional actors, who could be active during a flood rescue or flood mitigation intervention, to a commonly agreed standards, so called Standard Operating Procedures (SOP). This would facilitate the interoperability of the different regional units in case of a disaster hits the Danube Region. SOP, specific for the Danube region, provide a framework for effective disaster management, by providing clear guidance on how to respond to an emergency, how to conduct response activities safely, and how to comply with legal and regulatory requirements. They are an essential tool for ensuring the efficient and effective coordination of disaster response activities and they contribute to the overall resilience of communities to natural disasters. SOP and checklists provide the detailed instructions needed to perform assigned tasks. SOP clarify job requirements and expectations. They include a detailed explanation of what is expected of each organization and response-person during an emergency.

There are many different situations during a flood scenario, and one could not prepare an SOP that is good for every situation, but there is a need for a commonly usable SOP that covers the basics for all the regional rescue teams. Many volunteer teams in the region do not have the knowledge, nor the capacity to develop these SOP on their own, so there is a need to support them and help them to develop their SOP.

Teams and practitioners should be vigilant about the safety of their members. The protocols they use may vary from team to team, but they must at all times be aware of the risks and hazards they face and should liaise with the on-site safety and security officer to ensure they carry out their tasks in a safe manner. Participating teams should prepare for each operation and exercise with the correct personal protective equipment (PPE) and procedures for its use.

Standard Operating Procedures are important for disaster management for several reasons:

1. Improve efficiency: SOP provide clear, step-by-step instructions for responding to a disaster, which can help to ensure that actions are taken quickly and effectively, and that all response activities are coordinated.
2. Enhance safety: SOP can provide guidance on how to safely conduct disaster response activities, which can help to reduce the risk of injury or harm to first responders and other personnel.
3. Facilitate communication: SOP can help to ensure clear and consistent communication among all stakeholders, which can improve the coordination and collaboration of the disaster response.

4. Ensure compliance: SOP provide guidance on how to comply with regulations, laws and best practices, which can help to ensure that disaster response activities are conducted in an appropriate and legal manner.
5. Support training and exercising: SOP can be used as a tool for training and exercising of volunteers and first responders, to familiarize them with their roles and responsibilities, and to practice carrying out specific procedures in a simulated environment.
6. Adaptable to the local context: SOP can be adaptable to the local context, they can consider the specific hazards, vulnerabilities, and capacities of the area, which can help to ensure that disaster response activities are effective and relevant to the situation.
7. Continual improvement: SOP can be reviewed and updated regularly to reflect new information, best practices and lessons learned, which can help to continually improve the disaster management processes.

Host Nation & Organisation Support

EU Host Nation Support (HNS) means any action undertaken in the preparedness and response phases by the country receiving or sending assistance, or by the Commission, to remove foreseeable obstacles to international assistance offered through the UCPM. It also includes support from Participating States of the Mechanism to facilitate the transiting of this assistance through their territory. HNS refers to the logistical and operational assistance that a host country provides to foreign disaster response teams, such as transportation, communication infrastructure, housing, and access to local resources. In certain cases, as a macro-regional characteristic, a host organization can also provide similar support as the host nation. In specific cases, when cooperation agreement exists between associations, rescue units or humanitarian organizations from different countries, the support/request may arrive from the host or sending organization.

The feedbacks from trainings, exercises and workshops conducted in the last years clearly showed that there is a need for developing a host nation/organization support system that is tailored to suit the requirements of the emergency response units of the region.

Trainings and exercises

Trough the projects, the experts from participating partners were able to attend specialized trainings, table-top and field exercises, where they had the opportunity to learn valuable lessons from their foreign peers.

Training and exercising of volunteers are important for disaster management for several reasons:

1. Improves readiness: Training and exercising helps volunteers to develop the necessary skills and knowledge to effectively respond to a disaster. It also allows them to practice their roles and responsibilities in a simulated environment, which can help to improve their readiness for an actual emergency.
2. Increases public participation: Training and exercising volunteers can increase public participation in disaster management, which can help to improve the community's overall readiness and response to a disaster.
3. Enhances coordination and collaboration: Training and exercising volunteers can also enhance coordination and collaboration among volunteers, first responders, and other organizations involved in disaster management. This can improve the overall efficiency and effectiveness of the response to a disaster.
4. Identifies gaps and improvement areas: Training and exercising volunteers can help identify gaps in emergency preparedness and response capabilities, as well as areas for improvement. This information can be used to improve disaster management plans and strategies.
5. Builds public trust: By training and exercising volunteers, communities can have more trust in their emergency preparedness and response capabilities which can increase the level of public support for disaster management programs and plans.
6. Motivates volunteers: Participation in training and exercises can be an effective way to motivate volunteers and keep them engaged in emergency preparedness and response activities.

Overall, training and exercising volunteers is an essential aspect of disaster management, as it helps to ensure that volunteers are prepared, equipped and able to effectively respond to a disaster, in a way that is coordinated and efficient. It also helps communities to be better prepared and more resilient in the face of disaster, and improves overall public participation in the disaster management process.

There is a need for training of trainers, and responders by highly skilled instructors, however organizations in the region are usually lacking the funds to finance regular high-level training for their members. Financing training trough exchange of experts and capacity building programmes will enable the development of the skills of the volunteer and professional rescuers of the region, which in the long run will serve the people living in the areas, that are at risk.

Volunteer management / coordination

Volunteers, whether affiliated or unaffiliated/spontaneous, have various skills and resources they can offer during a disaster. When planned for, volunteers can make an invaluable impact by increasing response capacity through several different roles.

Volunteers augment the community's response capability by performing roles that require less technical training, allowing professionals to focus on the more highly specialized roles. This means volunteers may respond in multiple venues and hold varied roles throughout a single response.

In the Danube region, highly qualified volunteers are attached to a recognized voluntary or non-profit organization. They

are trained for specific disaster response activities and may fill many different roles. These roles can include search and rescue, damage assessment, medical services, emergency operations centre work, volunteer registration, and so much more. Therefore, when these volunteers are organized into teams, and train together for a long enough time, they will reach such a high level of usability that they can even deploy to other areas of the country, or even across the border when needed.

Managing volunteers can be a challenging task, especially when it comes to providing insurance and payment. However, there are a number of strategies and best practices that

organizations can use to effectively manage volunteers and ensure that they are properly insured and compensated for their time and efforts.

1. Clear Communication: Clear communication of the expectations and responsibilities of the volunteer role to volunteers prior to their engagement. This includes information on insurance coverage and compensation.
2. Volunteer handbook: a volunteer handbook or guideline provides information on insurance coverage, compensation, and other important issues related to volunteering. This can be a valuable resource for volunteers and can help to ensure that they are fully informed and understand the policies and procedures related to their role.
3. Volunteer agreement: Having volunteers sign a volunteer agreement before they start their role. This agreement should clearly outline the expectations, responsibilities, and rights of the volunteer, including information on insurance coverage and compensation.
4. Insurance coverage: adequate insurance coverage for volunteers can include liability insurance to protect volunteers and the organization in case of accidents or incidents, as well as coverage for injuries or accidents that may occur while a volunteer is on duty.
5. Payment or reimbursement: Providing volunteers with payment or reimbursement for out-of-pocket expenses, such as travel, meals, or other expenses incurred while performing their volunteer duties. This can help to ensure that volunteers are not out of pocket for expenses related to their role.
6. Recognition and appreciation: Showing appreciation and recognition for the volunteer's effort and time, this can be done through simple thank-you note, tokens, certificate of appreciation and so on.
7. Regular evaluations and feedback: Regular evaluations and feedback to volunteers on their performance, experience and engagement can help to improve the volunteer experience and ensure that volunteers are satisfied with their role and the organization.

By implementing these strategies, organizations can manage volunteers more effectively and ensure that they are properly insured and compensated for their time and efforts, which can help to attract and retain high-quality volunteers and contribute to the success of the organization and cross border cooperations in the region.

Research and innovation

Research and development in the field of disaster management in the Danube Region can be challenging for a number of reasons:

1. Limited data and information: The availability and quality of data and information on flood risks and vulnerabilities in the Danube Region can be limited, which can make it difficult to conduct accurate assessments and develop effective strategies for flood protection and disaster management.
2. Room for improvement in coordination: Research and development efforts in the Danube Region can be hindered by a lack of coordination among the countries and organizations involved, which can make it difficult to share information and resources and to develop a common approach.
3. Limited funding: Research and development efforts in the field of flood protection and disaster management can be costly and may rely on funding from a limited number of sources, which may not be sustainable in the long term.
4. Complex decision-making process: Research and development efforts in the Danube Region can be hindered by a complex decision-making process, as it often involves multiple countries, cultures and languages, which can make it difficult to reach a consensus.
5. Limited capacity: Some countries and organizations in the Danube Region may not have the necessary technical or institutional capacity to conduct research and development efforts in the field of flood protection and disaster management.
6. Limited public participation and ownership: Research and development in the field of flood protection and disaster management can be hindered by lack of public participation and ownership, which can result in low public support and limited effectiveness of the measures adopted.
7. Socio-Economic aspects: Flood protection and disaster management research and development efforts in the Danube Region needs to take into consideration the socioeconomic aspects of the region. Such as impact on local communities, businesses and industries.
8. Climate change: Climate change is expected to increase the frequency and severity of floods in the Danube Region, which will require ongoing research and development efforts to adapt and improve flood protection and disaster management strategies.

To overcome these challenges, it is important to establish effective coordination and information-sharing mechanisms among the countries and organizations involved in research and development efforts in the Danube region. Increasing funding for research and development, developing effective monitoring and evaluation mechanisms, and engaging public participation are also key to overcoming these challenges.

A macro-regional disaster management framework could help to address current gaps and is essential to address the complex, transboundary and common challenges of the region. It would help to improve understanding of the risks, develop more effective strategies and improve coordination and cooperation between countries.

Policy recommendations

8

In order to improve the cooperation between volunteers and government agencies during international (cross-border and regional) disaster response in the Danube region the following policy recommendations were developed, that can help to promote effective collaboration between these groups. The recommendations are targeting strategic decision-makers on a macro-regional as well as national level.

1. Volunteer registration and management: Having a clear and efficient system in place for registering and managing volunteers can help to ensure that their skills and abilities are effectively utilized in disaster response efforts. This registration should be linked to a management system that allows the coordination and integration of volunteer work into the overall disaster response plan.
2. Training and education: Providing harmonized training and education to both volunteers and government agencies can help to improve their understanding of their roles and responsibilities during flood response and how to work together effectively.
3. Clear communication and coordination: Establishing clear communication channels between volunteers and government agencies can help to ensure that information is shared effectively and that both groups are aware of the overall response plan.
4. Cross-sectoral cooperation: Ensuring close cooperation with the flood risk management sector especially in the areas of the flood risk assessment, flood risk and hazard mapping, flood risk reduction by programmes of measures, flood forecasting and warning, strengthening resilience and awareness raising.
5. Risk and Vulnerability assessments: It's crucial to have a comprehensive understanding of flood risks and vulnerabilities, and to use this information to guide flood response planning and preparedness.
6. Flexible funding and resource allocation: Governmental and non-governmental agencies, which are involved in response activities, should have flexible funding mechanisms that allow them to quickly and efficiently allocate resources, including funding, to support volunteer efforts, including equipment, transportation and training.
7. Recognition and appreciation of volunteer work: Recognizing and appreciating the work of volunteers can help to foster a culture of volunteerism and civil engagement, which can help to ensure that volunteers are willing and able to respond to future disasters.
8. Insurance and liability protection: governments should provide insurance and liability protection to volunteers in case of accidents or injuries that may happen during the volunteer work.
9. Development of standard operating procedures (SOP) for cross-border/macro-regional deployment of volunteer rescue units.
10. Strengthen knowledge sharing: Maintenance of macro-regional network of focal points and a knowledge portal to share online material (terminology, e-learning, reports and studies), as well as knowledge exchange opportunities (training of trainers, exchange of experts).

During the final event of the DAREnet project, which took place in Bratislava on 15th of February 2023, a policy panel was organised, consisting of a group of distinguished speakers from key policy areas. The panellists collectively confirmed that the policy recommendations presented in this report pave the way for the creation of the envisioned macro-regional disaster management framework in the Danube Region. Specifically, the following key messages were shared by the panellists and other key stakeholders.

Johan Magnusson

Team Leader for EU Macro-regional strategies (DG REGIO)

Due to the trans-boundary challenges in the field of disaster risk management, a high demand to work across different areas and regions can be observed lately. Full support has been pledged to the stakeholders involved in facilitating the establishment of channels with the other two macro-regional strategies (Adriatic and Ionian & Alpine). Specific opportunities to enable and further advance cross -macro-regional cooperation will be provided through the macro-regional strategies week (24-28 April 2023, Brussels and online) and the EU-INTERACT scheme.

Felix Bloch

Head of Unit B3 Knowledge Network and Evidence-based planning (DG ECHO)

The need for strong cooperation in the field of disaster risk management amongst key stakeholders, especially the relevant DGs, was strongly emphasised. Specifically for this purpose has the UCPM Knowledge Network been created, which aims to strengthen knowledge sharing practices from local to international levels. The inputs from the conference inspired reflections on how DG ECHO can improve their approaches so that they are better suited to the needs of specific communities, such as considerations of the revision of the Exchange of Experts programme to accommodate macro-regional approaches.

Philippe Quevauviller

Policy and Research Programming Officer (DG HOME)

The targeted use of available scientific knowledge and evidence to support preparedness and response needs to be ensured. Therefore, the challenges related to the uptake of results from EU-funded R&I projects need to be overcome to make certain that existing solutions reach the practitioners that need them. An important element to facilitate this are national practitioner platforms that might function as a relay of the CERIS. This possible relay between existing platforms, e.g. the ForAn network in Germany, the Spanish Community of Users will be discussed in a Forum on Governance of Major Risks & Societal Resilience in Toulouse (France) on 16-17 May 2023.

Laszlo Balatonyi

Priority Area Coordinator (EUSDR PA5)

It was highlighted that the DMWG is regarded as a flagship platform of the EUSDR which should receive continuous support within PA5 to fully unfold its potential and get the acknowledgement and visibility it deserves. The key challenge in this respect is the voluntary-based membership of organizations from the Danube countries of the DMWG. While non-binding nature allows for a certain level of flexibility, the absence of a mandate poses limitations.

Igor Liska

Technical Expert for Water Quality and Water Management (ICPDR)

Strengthening the resilience in the Danube River basin is one of the five key objectives of the Danube Flood Risk Management Plan. The nexus of flood risk management and disaster management needs to be further enhanced within this framework. The ministerial mandate of the ICPDR for the basin-wide implementation of the EU Floods Directive and EU Water Framework Directive provides a good cooperation platform for the Danube countries in the field of flood risk and river basin management.

Andriy Martynenko

Advisor (EUSBSR CBSS Safe & Secure Region)

Cross-sectorial cooperation and the engagement of volunteers have been critical success factors in the ongoing process of developing a common societal security culture in the Baltic Sea Region. The clear mandate from all DGs responsible for Civil Protection of the Baltic Sea States has enabled CBSS to lead and drive this process since its inception. To ensure that the common challenges in the field of disaster management are addressed in a targeted manner, cross-macro-regional approaches to knowledge exchange should be fostered through dedicated funding schemes.

Zsolt Kelemen

Chair of the Disaster Management Working Group of the EUSDR PA5

In agreement with the statement from the representative of the CBSS, we regard the targeted support to macro-regional approaches to disaster management through the development of dedicated funding instruments as essential to enable the continuation and further development of the outputs resulting from our EU-funded projects. Cross-macro-regional cooperation could further ensure consistency, complementarity, and efficiency of EU funds.

Sources used for this report

https://disastermanagement-danube.net/knowledge-hub

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DARE net
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