Peer review – report
Republic of Serbia 2019

Funded by
European Union
Civil Protection

Peer review

Republic of Serbia

2018-2019 Programme for peer reviews in the framework of EU cooperation on civil protection and disaster risk management.

Funded by
European Union
Civil Protection

ECORYS 90 Years Answering tomorrow's challenges today

Fraunhofer INT

Contents

Acknowledgements

This report would not have been possible without the time and expertise of the peer review team:

- **Carl-Gustav Erixon**, Team Leader at the Swedish Civil Contingencies Agency, Sweden
- **Jens Kampelmann**, Consultant/Disaster Response Team member, Germany
- **Antonella Morgillo**, civil servant at the Italian Civil Protection Department, Italy
- **Ljuban Tmušić**, Head of Department for Civil Protection and Humanitarian Aid, Directorate for Emergency Management, Ministry of Interior of Montenegro, Montenegro.

Gaetano Vivo supported and took part in the mission on behalf of the European Commission's DG Humanitarian Aid and Civil Protection (ECHO). A consortium led by Ecorys Netherland BV assisted the Commission in conducting the peer review. Niels van Wanrooij from Ecorys and Dr Gerald Walther from Fraunhofer INT were project managers for the Republic of Serbia peer review and provided technical and administrative support to the peers throughout the review process.

The peer review would not have been possible without the significant contributions of all consulted stakeholders in the Republic of Serbia who provided the review team with invaluable input throughout their stay in the country. The Sector for Emergency Management of the Ministry of Interior volunteered for the peer review on behalf of the Republic of Serbia and provided on-site support throughout the mission. Particular thanks are due for the full commitment of the sector's staff and for the full-time support provided by Dr Dejan Radinovic and Jelena Dimic.

The EU financed the peer review.

List of abbreviations

Abbreviation	Definition
APF	Adaptation planning framework
CCA	Climate change adaptation
DRM	Disaster risk management
DRR	Disaster risk reduction
EMS	Emergency medical services
EU-IPA	EU Instrument for Pre-accession Assistance
FbF	Forecast-based financing
IPA DRAM	Programme for Disaster Risk Assessment and Mapping
LEMH	Local emergency management headquarters
MEP	Ministry of Environmental Protection
MoI	Ministry of Interior
NDRA	National Disaster Risk Assessment
NDRMP	National Disaster Risk Management Program
NEMH	National Emergency Management Headquarters
OSCE	Organization for Security and Co-operation in Europe
PIMO	Public Investment Management Office
RGA	Republic Geodetic Authority

RHMSS	Republic Hydrometeorological Service of Serbia
SCTM	Standing Conference of Towns and Municipalities
SEM	Sector for Emergency Management
UCPM	Union Civil Protection Mechanism
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
RWD	Republic Water Directorate
MAFWM	Ministry of Agriculture, Forestry and Water Management

Executive summary

The peer review of the Republic of Serbia took place in May 2019, after a period of significant change in the country's disaster risk management (DRM) system. The peer review therefore represented a good opportunity to review what is going well (in the form of good practices), and to provide advice to help support ongoing developments.

During the 10-day mission in the country, the peer review team interviewed stakeholders from many different organisations, government agencies and authorities, NGOs and academia. The team was given access to documents concerning risk assessments and disaster management throughout the Republic of Serbia, including recently established legislation.

Disaster risk management approach

The new Law on Disaster Risk Reduction and Emergency Management was adopted in November 2018 and is pivotal for the system. As of May 2019, the 43 bylaws that need to accompany it are still in development. In addition, the following laws were adopted:

- the Law on Critical Infrastructure
- the Law on Voluntary Fire-Fighting Service
- the Law on Amendments to the Law on Fire Protection
- the Law on Reconstruction following Natural and Other Disasters
- the Law on National Spatial Data Infrastructure
- the Law on Meteorological and Hydrological Activities.

The legislative framework is comprehensive and clearly allocates responsibilities throughout the DRM process. The accompanying national programme for disaster risk management (DRM) is fully aligned with the Sendai Framework for Disaster Risk Reduction (Sendai Framework).

The national programme is implemented via a DRM action plan and supported by projects financed through the international community (e.g. the EU, the World Bank, the Swiss Confederation and the Japanese Government). which provides funds through grants and loans. In recent years, Serbia's government has also increased funding for DRR, albeit starting from a low base.

Local governments based, on the Law on disaster risk reduction and emergency management, must draw up their own plans for DRM. Initiatives contained in these local plans can be financed from the national budget through specific projects (allocated by the Public Investment Management Office) or through their own, limited resources.

Disaster management entities

The coordinating entity for DRM in Serbia is the **Sector for Emergency Management (SEM)**, part of the MoI. Its responsibility covers all phases in the DRM cycle from prevention to response. The SEM is represented on all governance levels, with units at the national, district, city and municipal levels.

Formal coordination of prevention, preparedness and response goes through the **National Emergency Management Headquarters (NEMH)**, an expert and operational state body with representatives from public and private authorities, formed to coordinate and manage emergency response and rescue operations, prevention and preparedness, and to introduce a DRR policy. The NEMH's commander-in-chief is the minister of the interior, while the head of the SEM chairs the NEMH. Districts and municipalities have their own district and local emergency management headquarters (LEMH), at the head of which is the district commissioner or the mayor. The mayor's second in command is the district or local commander of the SEM.

The coordinating entity for disaster recovery and for the allocation of international aid is the **Public Investment Management Office** of the Government of the Republic of Serbia (PIMO). It coordinates implementation of Serbia's National Disaster Risk Management Program (NDRMP) across all state (national, regional and local) authorities, as well as preparation of the action plan that builds on the national programme. The SEM and the PIMO work closely together and have an excellent working relationship.

At local level, the **Standing Conference of Towns and Municipalities (SCTM)** is an important actor, especially regarding flood risks in terms of first- order rivers. With the cooperation of towns and municipalities it coordinates the establishment of river basin protocols on common risks.

International collaboration

The Republic of Serbia has been a Participating State of the Union Civil Protection Mechanism (UCPM) since 2015 and is involved in various EU programmes such as the EU Instrument for Pre-Accession Assistance (IPA) I, EU-IPA II and IPA Programme for Disaster Risk Assessment and Mapping (DRAM). The international community is very involved in DRM in Serbia (especially the Organization for Security and Co-operation in Europe (OSCE), the United Nations Development Programme (UNDP), the United Nations Office for Disaster Risk Reduction (UNDRR), the Capacity for Disaster Reduction Initiative and the World Bank), and Sweden and Japan provide bilateral assistance. Serbia is part of the Disaster Preparedness and Prevention Initiative for South Eastern Europe and has signed agreements on cooperation in the field of emergency situations with: Ukraine (2004), Russian Federation (2009), Bosnia and Herzegovina (2010), Montenegro (2010), Azerbaijan (2011), Slovakia (2011), Hungary (2013), Croatia (2014), Slovenia (2015), Bulgaria (2019).

Integration of climate change adaptation

The Republic of Serbia ratified the Paris Agreement in 2017 and the Ministry of Environment is responsible for its implementation. At sessions of the NEMH, many climate change adaptation (CCA) measures are discussed and ministries propose new measures and how to implement them. Via the NEMH, a link has been created between DRR and CCA. As of May 2019, other CCA activities implemented include the organisation of consultations with civil society representatives under the umbrella of the United Nations Framework Convention on Climate Change (CCA was part of the two submitted communications and will be part of the third communication under preparation as of May 2019). These consultations were organised in cooperation with the UNDP in Serbia. Serbia's Nationally Determined Contributions also cover adaptation (as well as loss and damage) and will also cover CCA.

Prevention

Risk assessment

Serbia has identified the main hazards relevant to its territory and some degree of risk management has been conducted in multi-stakeholder working groups. As of May 2019, 11 hazards have been identified at national level, 27 risk scenarios have been produced in hazard-specific working groups and 10 scenarios have been deemed unacceptable.

Working groups address risks focused on one specific hazard. A systematic, multi-hazard approach to risk assessment that integrates cascading effects and new emerging risks resulting from climate change is needed. The exceptions are flood risks and chemical accident risks, for which an analysis of cascading effects and multi-hazard impacts has been conducted. Preparation of risk assessments for other major impact risks in Serbia (landslides, mudslides, forest fires) are delayed.

Risk management planning

Flood and wildfire risks have been prioritised as these represent the highest risks for Serbia.

At the national level, some projects and studies aiming to reduce flood risks have been conducted both with national resources (e.g. flood defences for the West and South Morava and other river basins) and in collaboration with international organisations (e.g. flood defences in the Kolubara river basin with the UNDP and the Japanese government). In addition, several projects for the implementation of structural measures, such as new embankments or construction of torrent check dams, are underway in collaboration with the delegation of the EU in Serbia, the World Bank and the PIMO.

A guideline for management of forest fire risks has been stipulated in the Law on Forestry, mandating that all forests must have their own protection plan with detailed instructions on how best to respond.

Risk consideration and planning for other risks, such as land use plans or earthquake measures for new buildings, is less developed. Although the principle of 'Build Back Better' is embedded in the Law on Reconstruction following Natural and Other Hazards, it is unclear how this approach is implemented in the design and maintenance of the infrastructure.

Disaster losses are systematically recorded in the Desinventar database from 2013 onwards. As of May 2019, the process of data collection into a national register is not yet complete, therefore the impacts of the disaster losses are still to be systematically evaluated.

Preparedness

Preparedness and contingency plans

As of May 2019, detailed disaster preparedness and contingency plans are limited. The National Protection and Rescue Plan is still being prepared. At the local level, 130 out of 174 local self-government units have initiated a risk assessment, which serves as a prerequisite for the protection and rescue plan. Of the 174 local self-government units, 15 have developed a protection and rescue plan, of which 10 have been approved.

The plans, which are still under development, will of course need to contain those aspects prescribed by law. Moreover, plans will need to facilitate a predefined, gradual augmentation of response. Finally, plans should integrate the use of international resources and define the best resources to call upon in specific circumstances.

Early warning

As of May 2019, there are limited forecasting capabilities available. For instance, there is limited capacity for early warning on earthquakes as the Institute of Seismology does not yet have sufficient capacity (technology and personnel) to function effectively. However, a notable exception is the Republic Hydrometeorological Service of Serbia (RHMSS), which can issue timely flood-related meteorological and hydrological warnings.

The national siren system remains to be completed, and in many rural municipalities early warnings can only be spread through mobile communications. A dedicated 112 call centre is not yet functional.

Capability analysis and planning

The SEM has highly dedicated and qualified personnel, which is a huge asset. However, staff levels do not reflect the level of the SEM's DRM responsibilities. Funding is also a challenge, especially the fact that there is no budget covering operational costs of the SEM. The lack of funding and personnel poses a risk to the sustainability of projects, especially those that are funded internationally. In addition, as of May 2019, the premises housing the SEM are suboptimal.

At the local level, administrative capacities are hampered by a lack of funding, personnel, expertise, training and equipment. Together with the aforementioned challenges, this affects how effectively the Law on Disaster Risk Reduction and Emergency Management can be implemented.

Emergency capacities are already overstretched for everyday response, and will only become further challenged in the event of a major disaster unless provision is made to scale up forces or, for example, to create regional reserves and adapt the emergency medical system.

Training and exercises

The number of training facilities, trainers and funding for training is limited. This shortfall translates into a lack of training for responders (especially the voluntary specialised civil protection units) as well as municipal staff. The PIMO has assessed what training facilities are needed.

Public awareness

The SEM takes steps to convey DRR-related information to the general public, especially information on how to prepare for and react in the event of a disaster. The SEM tries to achieve this goal by educating children, who in turn inform and motivate their families.

Good practices

Although good practices have been identified in many parts of Serbia's DRM system, several stand out and merit explicit mentioning.

- The PIMO is a highly competent, agile unit with strong connections to central government, which acts as a strong voice to serve the broadest DRM needs. It has highly qualified and dedicated staff.
- The SEM has institutional depth, represented at all levels of government and throughout the country. The dedication of the SEM's personnel, who are highly qualified and motivated, is an important asset for Serbia.
- The NEMH, which has three or four top-level meetings each year, is an excellent institution that serves as a good example for multi-stakeholder collaboration.
- The new legislative framework is comprehensive and strong.
- In terms of plans, the law prescribes certain very important elements (although some aspects still require work).
- All the relevant hazards for Serbia have been identified, which represents a good starting point for a multi-risk assessment.
- Working groups, which include relevant stakeholders so that information is shared well within the hazard-relevant community, have been established for each hazard.

Recommendations

The peer review team recommends four changes to the Republic of Serbia to improve its DRM system. Discussed in more detail in the concluding chapter, the recommendations are to:

- strengthen the comprehensiveness and inclusiveness of the risk assessment process;
- develop disaster preparedness and contingencies plans and capacities;
- strengthen the SEM's national and local administrative capacity and funding;
- continue to strengthen the overarching institutional framework.

1. Introduction

Peer review is a governance tool by which performance in disaster risk management (DRM) and civil protection of the reviewed country is examined on an equal basis by experts (reviewing peers) from countries participating in the Union Civil Protection Mechanism (UCPM). The process is based on the exchange of experiences and results in non-binding recommendations for policy improvements in DRM and civil protection.

The peer review process provides an effective way to:

1. facilitate the exchange of good practices
2. strengthen mutual learning and common understanding
3. deliver credible and trusted recommendations.

Under the EU civil protection legislation, peer reviews can contribute to both prevention and preparedness policy and thus cover the whole risk management cycle. The scope of the peer review is defined by the country under review with a choice between a 'thematic' and a 'comprehensive' peer review. Peer reviews strengthen cooperation between Participating States and contribute to an integrated approach to DRM by linking risk prevention, preparedness and response actions. The peer review process consequently has the potential of fostering wider policy dialogue in Europe, improving consistency and steering progress in critical areas for EU cooperation on civil protection and DRM.

After two pilot reviews (Finland, the United Kingdom (UK)), a first round of peer reviews took place between 2015 and 2016, covering Bulgaria, Estonia, Georgia, Malta, Poland and Turkey. The peer review of Serbia is part of the second round, which also covers Algeria, Cyprus, North Macedonia, Portugal and Tunisia.

The six concrete objectives of the peer review programme are to:

- contribute to improved policymaking on national DRM and civil protection through mutual learning and external assessment by reviewing experts from other countries acting as peers;
- contribute to the development and implementation of relevant EU policies and steer progress in priority actions for the EU cooperation on DRM and civil protection, including, if relevant, a contribution to the implementation at national level of the international framework for DRR (Hyogo Framework for Action and the Sendai Framework for Disaster Risk Reduction (Sendai Framework));
- increase the consistency between various national DRM and civil protection policies and stimulate the transfer of good and innovative practices;
- foster policy dialogue in Europe and enhance regional cooperation between countries exposed to common or similar hazards and risks;
- encourage awareness raising through involvement of all stakeholders in the review process and wide dissemination of the results;
- ensure visibility and political commitment at a high level to promote the DRM agenda.

1.1 Scope of the review

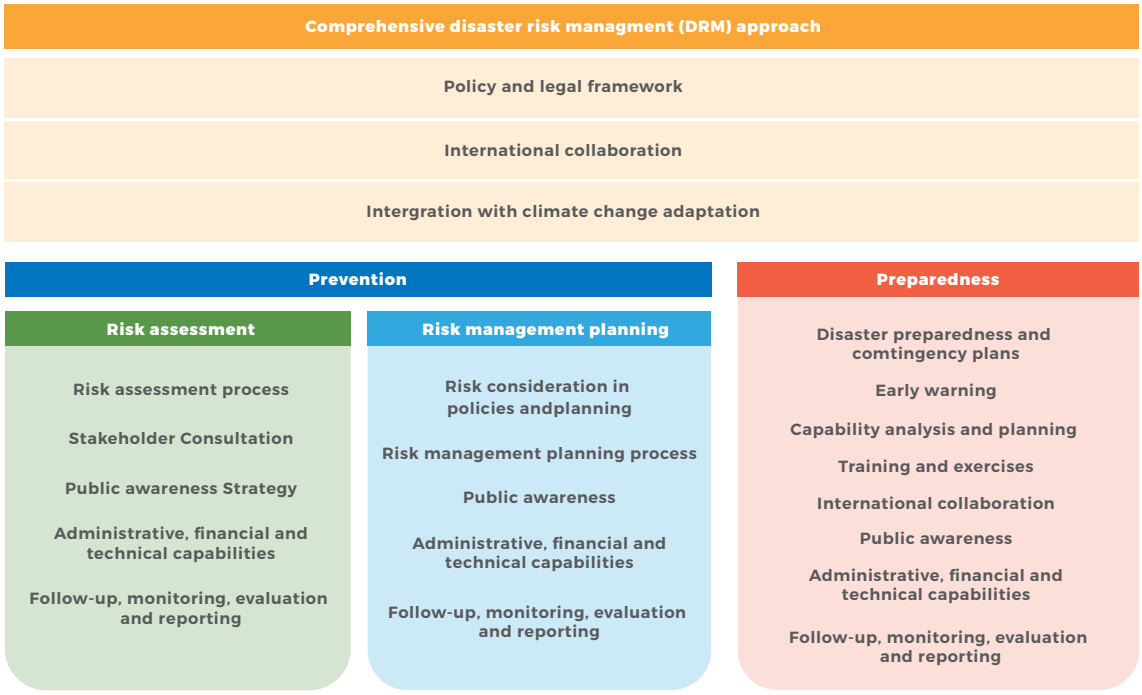
Serbia opted for a 'comprehensive' review and participated in the 2018-2019 peer review programme. The comprehensive analytical framework, on which the peer review is built, incorporates principles developed at both global (specifically the Hyogo Framework for Action and the Sendai Framework) and European (specifically the UCPM) levels. The comprehensive review framework covers several high-level (thematic) processes, each incorporating a range of relevant sub-processes. Guiding questions were developed for each of the sub-processes to streamline (within reason) the peer review process across participating countries.

The processes covered by the comprehensive review of Serbia are as follows:

- risk assessment and risk management planning (prevention)
- preparedness
- a comprehensive DRM approach.

Figure 1 gives an overview of the sub-processes explored during the peer review (the **annex** has more detail on the guiding questions contained within the various thematic sub-processes).

Figure 1: Overview of comprehensive review framework



This report identifies good practices and areas for improvement and proposes a series of recommendations. It is for the Government of Serbia to consider and determine whether and how the recommendations should be implemented to contribute to its policy goals.

1.2 Review process

- Once Serbia's participation in a comprehensive DRM review was confirmed, a call for nominations of experts was sent to countries participating in the UCPM and eligible neighbouring countries. Three peers from EU Member States – Germany, Italy and Sweden – were chosen to participate, together with a peer from Montenegro. The peers were supported in their tasks by the European Commission and a project team contracted by the Commission.
- The peer review was conducted over a 10-day period from 6 May until 16 May 2019. The review opened with a meeting with representatives of the Sector for Emergency Management (SEM) of Serbia's Ministry of Interior (MoI), which hosted the peer review team throughout the mission. The peer review officially began on the second day, with Mr Johannes Luchner (Director of Directorate B – Disaster Preparedness and Prevention of DG ECHO) expressing his appreciation to the Republic of Serbia for its willingness to participate in the process.
- During the 10-day mission, the peer review team interviewed stakeholders from many different organisations, government agencies and authorities, NGOs and academia. Team members were also given access to documents concerning risk assessments and disaster management in the Republic of Serbia, including recently established legislation (see the **annex**).
- Interviews took place with the following institutions (in chronological order):
  - the Sector for Emergency Management of the Ministry of Interior in Belgrade
  - International partners – representatives of the World Bank, the United Nations Development Programme (UNDP), Unicef, EU Delegation in Serbia, the Organization for Security and Co-operation in Europe (OSCE) and Caritas at the SEM MoI headquarters (HQ) in Belgrade
  - the Public Investment Management Office in Belgrade
  - the Republic Hydrometeorological Service in Belgrade
  - the Belgrade Emergency Management Department, Belgrade Fire Brigade and 112 centre
  - the Ministry of Environmental Protection in Belgrade
  - the Ministry of Agriculture's Forestry Department in Belgrade
  - the Republic Water Directorate in Belgrade
  - the Seismological Survey in Belgrade
  - the Republic Geodetic Authority in Belgrade
  - the SEM Emergency Management Department in Krusevac
  - the Mayor's Office in Krusevac
  - the SEM Training Centre for Response to Traffic Accidents in the municipality of Ruma
  - the volunteer fire-fighting unit in the village of Erdevik
  - the SEM MoI Emergency Management Department in the city of Novi Sad
  - the Standing Conference of Cities and Municipalities in Belgrade

- the Belgrade Municipality of Obrenovac
- the Statistical Office in Belgrade
- the University of Belgrade – Faculty of Security Studies
- the Ministry of Education, Science and Technological Development in Belgrade
- Red Cross of Serbia office in Belgrade.

This report represents an analysis of the situation in the Republic of Serbia as of May 2019.

1.3 Country profile

1.3.1 Overview

The Republic of Serbia is a landlocked country located in the central Balkans in southern Europe. The country's population is about 7 million (2016). Serbia falls within the Central European time zone (UTC+1).

The capital, Belgrade, is home to 1.3 million people. While the largest ethnic group comprises Serbs (83.3 %), there are several smaller ethnicities comprising Hungarians (3.5 %), Roma (2.1 %) and Bosniaks (2%). A variety of other groups make up the remaining 9 %[1]. Geographically, the country consists of plains in the northern third, hills and rivers dominate the central third and mountains shape the southern third.

Serbia's climate ranges from continental in the north to Mediterranean and continental in the other regions. Summers in the north are generally hot and humid and winters quite cold. Away from the north, summers tends to be hot and dry and winters relatively cold with heavy snowfall.

1 Source: https://eacea.ec.europa.eu/national-policies/eurydice/content/population-demographic-situation-languages-and-religions-66_en

1.3.2 Disaster risk profile

Several natural disasters occurred in Serbia between 1990 and 2018. **Table 1** depicts these disasters, sorted by number of deaths, number of people affected and economic damage incurred.

Table 1: Overview of natural disasters in Serbia, 1990-2018[2]

Disaster	Year	People killed
Flood	2014	51
Extreme temperature	2012	10
Extreme temperature	2012	9
Extreme temperature	2012	6
Extreme temperature	2017	6

Disaster	Year	People affected
Extreme temperature	2012	70 000
Flood	2014	49 600
Earthquake	2010	27 030
Extreme temperature	2012	18 234
Flood	2007	12 370

Disaster	Year	Damage ('000 USD)
Flood	2014	2 048 262
Earthquake	2010	132 260
Flood	2016	100 000

2 Source: EM-DAT, August 2018

The country's geography and climate render it highly vulnerable to wildfires during the summer months, as well as to river and urban flooding events. There is also a moderate risk of earthquakes, water scarcity and heatwaves.

Regions differ in their exposure to the various types of hazard and associated risk levels. **Table 2** gives an overview of the main hazards, risk levels and regions affected.

Table 2: Main natural hazards in Serbia[3]

Hazard	Risk level	Region(s)
Earthquake	Moderate	Entire country except far north regions
River and urban floods	High	Most of the country
Lack of drinking water	Medium	Entire country
Wildfires	High	Entire country
Extreme heat	Medium	Entire country

1.3.3 Vulnerability

Vulnerability is determined by the set of characteristics and circumstances of a community or system that make it susceptible to the damaging effects of a disaster. It can also be understood as the 'human dimension of disasters'[4]. For the purpose of this country report, vulnerability is measured by reference to the vulnerability variable included in the **Inform Index** (**Table 3**).

Table 3: Vulnerability[5]

Vulnerability	Score
Socioeconomic vulnerability	1.8
Vulnerable groups	3.1
Overall vulnerability	**2.5**

In general, Serbia's vulnerability is low. The only issue that negatively affects vulnerability is the category of vulnerable groups and, within that, uprooted people (score of 4.7) specifically.

3 Source: Think Hazard, Serbian government
4 Source: https://www.preventionweb.net/risk/vulnerability
5 Note: Score based on scale from 0 (best) to 10 (worst)
Source: Inform Index, 2019

1.3.4 Lack of coping capacity

Lack of coping capacity derives from structural shortcomings (institutional or infrastructural) that limit a country's ability to effectively respond to and prepare for disasters. For the purpose of this country briefing, this is measured through the lack of coping capacity variable included in the **Inform Index**. Lower values represent a higher coping capacity ('less lack of coping capacity'). Serbia's overall score of 3.9 (see **Table 4**) indicates a generally strong coping capacity; at the same time, it is noteworthy that institutional lack of coping capacity is high in comparison with the low infrastructure score.

Table 4: Lack of coping capacity[6]

Lack of coping capacity	Score
Institutional	5.2
Infrastructure	2.1
Overall lack of coping capacity	**3.9**

1.3.5 National disaster management system

As a Participating State within the UCPM, Serbia is fully committed to EU values and goals concerning cooperation and mutual assistance within this EU programme. Additionally, in accordance with Decision No. 1313/2013/EU of the European Parliament, the Council and EU, and following Host Nation Support Guidelines concerning removal of any foreseeable obstacles to international assistance offered through the UCPM, Serbia supports EU Member States by facilitating the transiting of this assistance through its territory.

The SEM is the leading Serbian authority in charge of disaster risk reduction (DRR) and emergency management. In case of large-scale disasters, however, when the emergency response capacities of the SEM cannot cope adequately, other resources of the national protection and rescue system should be activated, including personnel, vehicles, construction machinery and specialised police equipment, specialised companies or armed forces.

6 Note: Score based on scale from 0 (best) to 10 (worst)
Source: Inform Index, 2019

1.3.6 Disaster management entities

Table 5 gives an overview of the most important stakeholders and the legislation that defines their function. The most important stakeholders are briefly elaborated on in the subsequent paragraphs.

Table 5: Disaster management entities[7]

Organisation(s) and function	Relevant legislation
MoI/SEM • **coordination of all activities**	▶ Law on Disaster Risk Reduction and Emergency Management (OC, No. 87/2018) ▶ Law on Critical Infrastructure ▶ Law on Voluntary Fire-Fighting Service ▶ Law on Amendments ▶ Law on Fire Protection (OG, No. 87/18)
Public Investment Management Office • **recovery**	Law on Reconstruction following Natural or Other Hazards
Ministry of Defence	Law on Defence, and Law on the Serbian Armed Forces
Seismological Institute of Serbia • **risk assessment: earthquakes**	Law on the Republic Seismological Institute (OG 71/94)
Ministry of Mining and Energy/Serbia Geological Institute • **risk assessment: landslides, mudslides, erosion**	Law on Mining and Geological Research (OG 101/2015)
Ministry of Agriculture, Forestry and Water Management/Republic Water Directorate • **flooding**	Law on Water Management (OG 30/10, 93/12, 95/18 and 101/16)
Republic Hydrometeorological Institute of Serbia • **survey of national protection system and rescue from the consequences of extreme weather events and disasters**	Law on Meteorological and Hydrological Activity (Official Gazette of RS, No. 88/10), Law on Protection from Hail (Official Gazette of RS, No. 54/15), Law on Water (Official Gazette of RS, No. 30/10, 93/12 and 101/16)

7 Source: Serbian government

Organisation(s) and function	Relevant legislation
Ministry of Environmental Protection • **agency for protection of environment** • **pollution of environment and impact to human health**	Law on Environmental Protection (OG 135/2004, 36/2009,72/2009)
Ministry of Health • **Public Health Institute of Serbia** • **risk assessment: epidemics, pandemics**	Law on Protection of Population from Infectious Diseases (OG 15/2016)
Ministry of Agriculture, Forestry and Water Management • **Plant Protection Directorate** • **risk assessment: plant diseases**	Law on Plant Health (OG 41/2009)
Ministry of Agriculture, Forestry and Water Management • **Veterinary Directorate** • **risk assessment: animal diseases**	Law on Veterinary Medicine (OG 91/05, 30/10)
Ministry of Agriculture, Forestry and Water Management • **Forestry Directorate** • **risk assessment: land fires, explosions**	Law on Forests (OG 30/10, 93/12, 89/15)

Organisation(s) and function	Relevant legislation
Ministry of Construction, Transport and Infrastructure • **risk assessment of technological accidents: hazardous materials transport** **Ministry of Environmental Protection** • **risk assessment of technological accidents: production and storage of dangerous substances**	Law on the Transport of Dangerous Goods (OG 104/2016), European Agreement on the International Transport of Dangerous Goods on Inland Waterways (ADN) of 26 May 2000 (OG 3/10, 1/14, 7/15), European Agreement on the International Carriage of Dangerous Goods by Road (ADR) of 30 September 1957 (OG 59/72, 8/77, OG 2/10, OG 14/13), Law on the Transport of Dangerous Goods (OG 104/2016), European Agreement on the International Transport of Dangerous Goods on Inland Waterways (ADN) of 26 May 2000 (OG 3/10, 1/14, 7/15), European Agreement on the International Carriage of Dangerous Goods by Road (ADR) of 30 September 1957 (OG 59/72, 8/77, OG 2/10, OG 14/13), Convention on International Carriage by Rail (COTIF) of 9 May 1980, Annex C, Regulation on the International Carriage of Dangerous Goods by Rail (RID) (OG 8/84, OG 3/93, OG 102/07 and OG 1/10, 2/13 and 17/15) Law on Environmental Protection (Official Gazette of RS, No. 135/04, 36/09, 72/09/09, 43/11-US, 14/16, 76/18 and 95/18), Rulebook on the List of Dangerous Substances and their Quantities and Criteria for Determining the Type of Documents Produced by the Operator of Seveso Facilities or Complex (Official Gazette of RS, Nos. 41/10, 51/15 and 50/18), Rulebook on the Content of Accident Prevention Policy and the Content and Methodology of Drafting the Safety Report and the Plan of Accident Protection (Official Gazette of RS, No. 41/10), Rulebook on the Content of the Notice on the New Seveso Complex, the Existing Seveso Facility or Complex and the Permanent Termination of the Operation of the Seveso Facility or Complex (Official Gazette of RS, No. 41/10), Rulebook on the Procedure for Notification or Exchange of Data on the Seveso Facility or Complex Whose Activities May Lead to Chemical Accidents with Transboundary Effects (Official Gazette of RS, No. 26/13), Law on Ratification of the Convention on Transboundary Effects of Industrial Accidents (Official Gazette of RS, 'International Treaties', No. 42/09)

Organisation(s) and function	Relevant legislation
Serbian Radiation and Nuclear Safety and Security Directorate (SRBATOM) • **risk assessment: nuclear and radiological accidents**	Law on Protection against Ionizing Radiation and on Nuclear Safety (OG 36/09, 93/12), Convention on Early Notification of Nuclear Accidents (OG 15/89), Convention on Assistance in the Case of Nuclear Accidents or Radiological Hazards (OG 4/91), IAEA Standards

Sector for Emergency Management, Ministry of Interior

The leading national authority of the Republic of Serbia in charge of civil protection and emergency management in the event of natural or man-made disasters is the SEM. It is a successor to the Sector for Protection and Rescue, which was created within the MoI in 2007. In 2009, the SEM was created, merging Civil Protection of the Ministry of Defence and experts of the Ministry for Environmental Protection.

The SEM is responsible for prevention, preparedness and response activities. It coordinates activities across the various levels of government (municipality, city, district, national) and has offices at all entities in each of these levels, so that there is a local headquarters of the SEM in each municipality, city and district. Activities are coordinated according to the subsidiarity principle on the most local level possible, and activities are scaled up when necessary (e.g. when an emergency affects multiple municipalities, coordination can be scaled up to the district level). Through this structure, the SEM is well represented throughout the country.

In its administrative seat and 27 county departments throughout Serbia, the SEM comprises the Department for Preventive Protection, the Department for Risk Management, the Department for Fire and Rescue Units and Civil Protection, the Division for Legal Affairs and International Cooperation and the Division for Economic and Material and Technical Support. The SEM's operational capacities comprise approximately 4 000 professionals, of which 3 300 are specialised fire and rescue units and emergency first responders. In addition to professional firefighters, there are also several volunteer fire-fighting units throughout the Republic of Serbia.

Depending on the scale of a disaster and the need for additional resources, professional firefighters are usually reinforced with members of specialised or general-purpose civil protection units, which are reserve volunteer forces. These civil protection units are educated, equipped and trained as operational forces for the execution of civil protection tasks. They come in two forms: specialised units and general-purpose units. These civil protection units are formed by local self-governments, companies (e.g. Seveso establishments) and other legal entities.

Specialised civil protection units are formed by the responsible local authority (municipality, city, district) or by companies and other legal entities in accordance with the assessment of risks that represent a potential threat to the territory.

Specialised civil protection units are formed around the following areas of expertise:

- fire protection
- water rescue
- inaccessible terrain
- first aid
- unexploded ordnance detection and destruction
- RHB protection
- urban search and rescue
- monitoring
- alerting
- telecommunications
- care.

General-purpose civil protection units are formed, trained and equipped by local self-governments, are staffed in the same way as the specialised civil protection units and are responsible for simpler tasks such as protection and rescue, including:

- helping to construct and reinforce dams to protect against floods (filling and setting sandbags);
- snow clearing;
- helping to sanitise terrain and facilities;
- helping to extinguish open fires;
- clearing debris.

Finally, all organisations classified as being in the first category of danger according to the Law on Fire Protection must have an industrial fire-fighting unit.

National Emergency Management Headquarters and local emergency management headquarters

The main coordinating body is the National Emergency Management Headquarters (NEMH), an expert and operational state body formed to coordinate emergency response and rescue operations, manage prevention and preparedness and to introduce a DRR policy. Its goal is to coordinate activities in the field of emergency management at national, regional and local levels, as well as to implement the concept of DRR in national and local policies, sustainable development strategies and protection and rescue strategies. The NEMH has the mandate to provide the SEM with additional resources of other entities participating in the national protection and rescue system, in that way ensuring a joint approach and full-capacity state response to an emergency situation. As an organisational unit of the MoI, the SEM performs the professional and administrative–technical tasks necessary for the work of the NEMH.

At its session held on 12 May 2011, the Government of the Republic of Serbia adopted Decision 05 No. 02-3424/2011-1 on the establishment of the NEMH, established on 03 June 2011. The NEMH was incorporated into the National Platform for Disaster Risk Reduction international framework following amendments made to the Law on Emergency Situations adopted at the end of 2011.

The NEMH's commander-in-chief is the minister of the interior, while the head of the NEMH is the head of the SEM. The other members of the NEMH are:

1. ministers in the field of: state administration and local self-government, defence, health, agriculture, water management and forestry, labour and social policies and environmental protection and other ministries;
2. the ministers or the persons they authorise, whose tasks include foreign affairs, transport and telecommunications, construction, mining, energy, information, finance, trade and services;
3. professionals from the Ministry of Interior, the Serbian Army, the Red Cross of Serbia and the Mountain Rescue Service of Serbia;
4. managers of special organisations in the field of meteorology, seismology, hydrometeorology;
5. managers of public enterprises, companies and other legal entities, as well as chairs of humanitarian organisations, associations of citizens or managers of institutions that perform activities of importance for protection and rescue in emergency situations.

The NEMH is mirrored at lower levels of administration so that there are municipal, city, district and provincial emergency management headquarters. In principle, local emergency management headquarters (LEMH) are responsible for disaster management, with responsibilities scaled up according to the severity of a disaster and its geographical reach.

The Public Investment Management Office (PIMO)

The responsibility for the reconstruction phase and (international) aid allocation following natural and other risks lies with the PIMO. Its forerunner was established in response to severe floods in 2014 that affected most of the country. The PIMO takes steps to provide assistance and enable implementation of reconstruction, performs the necessary procurement of goods and services, coordinates and directs the work of other bodies and organisations involved in providing assistance and reconstruction. It also organises needs assessments after natural and other disasters together with other tasks to achieve effective assistance and reconstruction, in accordance with the law and the founding act.

In addition, the PIMO is in charge of coordinating all state authorities, local authorities and other institutions in the Republic of Serbia in the implementation of the National Disaster Risk Management Program (NDRMP), adopted by the government in December 2014. In 2017, the government adopted PIMO's Action Plan for the Implementation of the NDRMP for the period 2017-2020; the action plan is fully aligned with the Sendai Framework for the period 2015-2030. Furthermore, the PIMO participated in the process of drafting the Law on DRR and EM, the Law on Critical Infrastructure and the Law on Voluntary Firefighting.

The Standing Conference of Towns and Municipalities

An important actor at the local level is the Standing Conference of Towns and Municipalities (SCTM). As the national association of local authorities, it coordinates establishment of river basin protocols in cooperation with towns and municipalities against common risks. The city of Kraljevo, widely supported by the Ministry of Local Self-Government (MDULS), the Ministry for Environmental Protection, the PIMO, the SCTM, the UNDP and Caritas initiated this original form of non-mandatory cooperation.

In 2017, the SCTM actively participated in drafting a new Law on Disaster Risk Reduction and Emergency Management prepared by the SEM. In February of that year, the first two protocols were signed among 26 towns and municipalities belonging to two river basins: Zapadna Morava and Kolubara. A year later, in February 2018, more than 20 towns and municipalities from Velika Morava and Upper Danube Banat basins signed two protocols. Additionally, the Drina River Basin signed a protocol with 10 municipalities in 2018. There are 10 river basins in Serbia and all 10 protocols are expected to be signed by the end of 2020.

1.3.7 Disaster risk reduction-relevant sectors

An overview of all relevant stakeholders that participated in the peer review can be found in the **annex**.

2. Comprehensive disaster risk management approach

The Republic of Serbia is a disaster-prone country, subject to a wide variety of natural hazards, including floods, forest fires, landslides and earthquakes. These disasters, especially weather-related events, are likely to increase in terms of numbers and severity due to climate change. In recent years, Serbia has faced the consequences of several natural hazards, claiming human lives and resulting in economic losses. The flooding of May 2014 stands out as a disaster with a devastating impact. As a result, the floods also opened a window of opportunity for further development of Serbia's DRM[8] system. External aid and investments have certainly helped that development, but public opinion and political will have also reinforced the need for a more comprehensive approach to capacity building, which includes prevention and resilience. Though many challenges remain, such as implementing ambitious legislation, developing more stable governance structures and finding the financial means to do so, this peer review finds that, overall, Serbia is on the right path.

2.1 Policy and legal framework (at national, regional and local levels)

2.1.1 Disaster risk reduction legislation and strategies

In recent years, the Republic of Serbia has made progress in strengthening the legal framework as well as the policy environment for emergency management and risk reduction. Serbia has a highly centralised government with much de facto power centred at the national level and within ministries. Legislation and regulations are therefore especially important components in developing DRM.

As mentioned, in 2009, the SEM was created within the MoI. In the same year, Serbia adopted the Law on Emergency Situations, which provided regulations in the field of civil protection and emergency management. The National Strategy for Protection and Rescue in Emergency Situations was adopted in 2011, providing a framework for prevention, preparedness and response. The law and strategy were developed together with UNDP Serbia and the United Nations Office for Disaster Risk Reduction (UNDRR) in line with the Hyogo Framework for Action guidelines.

8 DRM is defined as 'the systematic process of using administrative directives, organisations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster. ...[It] is an extension of the more general term "risk management" to address the specific issue of disaster risks. Disaster risk management aims to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness.' (Source: https://www.unisdr.org/files/7817_UNISDRTerminologyEnglish.pdf).

Still, the legislation had its limitations and implementation was slow. As proposed in the Recovery Needs Assessment after the floods of May 2014, Serbia's DRM-related legislation focused on emergency response, while concepts of prevention and preparedness remained to be operationalised.

After the floods of 2014, the government began to draft a new and more comprehensive law. The process was based on lessons learned from implementing the Law on Emergency Situations as well as the handling of the floods and other events since 2009. The 2014 floods revealed which parts of the existing law were inapplicable and which parts represented the weakest links. The preventive provisions of the existing law lacked penal provisions and were therefore not enforced. The intention was that the new legislation and other relevant frameworks for DRM would fully align with guidelines in the Sendai Framework. The new Law on Disaster Risk Reduction and Emergency Management was adopted in November 2018. In the new law, prevention as well as preparedness for response are both recognised as areas of strategic importance, and the SEM's responsibilities are further clarified and strengthened, particularly its role in coordinating prevention efforts.

Though the Law on Disaster Risk Reduction and Emergency Management is comprehensive and the SEM is the natural focal point and responsible stakeholder for driving the DRR agenda, there are several other laws and stakeholders that relate to and affect tasks and responsibilities in the field of DRR, particularly in terms of prevention. In general, each ministry works to incorporate preventive measures into the specific legislation for which it is responsible. The SEM coordinates these stakeholders.

Legislative efforts in recent years have recognised the need for more flexibility and power of initiative at the local level. For example, the new Law on Amendments on Local Self-Government has recognised the efforts of the SCTM to improve DRR efforts at the local level by providing new legal possibilities in the field of inter-municipal cooperation.

The Law on Reconstruction following Natural and Other Hazards delineates the mandate of the PIMO. The PIMO was established in 2014, originally under the name of Governmental Office for Reconstruction and Flood Relief. The office was tasked with coordinating and managing the projects of reconstruction and external aid provided in the aftermath of the floods.

The PIMO has helped to support prevention efforts, including coordinating the drafting of the NDRMP, which was launched on 4 March 2015, and the following action plan for its implementation for the 2016-2020 period. The NDRMP and action plan were developed with the support of the EU, the United Nations, the World Bank and the Swiss Confederation with the aim to enable a systemic approach to the DRM and recovery process (prevention–response–reconstruction). The action plan involved several ministries and stakeholders at the national level and comprised various short-, medium- and long-term activities, all with clear goals, budgets, targets, indicators and time frames. The action plan also introduced progress reports on implementation of the activities adopted by the government two or three times a year. In accordance with the new DRM legislation, the SEM is likely to drive future processes for NDRMP and associated strategies, in line with its overall responsibility for DRM in Serbia. The action plan follows the Sendai Framework but the aim is to align it more closely in 2020. The Law on Voluntary Firefighting helps municipalities to strengthen the responsive capacities through support voluntary firefighting organisations.

2.1.2 Funding

The ambitious legislative standards set in the DRR programme and action plan are to a large extent supported by projects (grants and loans) from the international community, for instance the EU and the World Bank. Many of the project applications for reconstruction and for prevention are managed or facilitated by the PIMO. The above-mentioned action plan for DRR 2016-2020 covers the four priorities of the Sendai Framework, namely understanding risks, institutional build-up, investments in prevention and recovery, and preparedness. According to the NDRMP, the figures on total funding needed are as follows:

Resources for the implementation of the activities contained in the Action Plan are secured from the budget of the Republic of Serbia and amount to EUR 320,000.00, and those secured from the international development assistance and loans amount to EUR 62,442,040.00. It is necessary to secure EUR 1,040,450,520.00 for those activities for which implementation the resources have not been secured. For those estimated required funds which have not yet been allocated, the talks on the support to the implementation of the [Action Plan] shall be organised with the donors, OCDs and other stakeholders[9].

Most of this funding is for work on flood defences (approx. EUR 700 million) and equipment for disaster response (approx. EUR 300 million). The action plan also specifies that 'total funding required' might change after development of the National Risk Assessment and other analyses, studies and planning documents, indicating that numbers on total needs might be even higher. It should also be noted that 'resources required' refers to 'additional costs' compared to current material and staff capacities, indicating that the total state budget allocated to different activities is higher than the EUR 320 000 specified above.

DRR in general and the SEM's activities specifically are recognised as important. Specific state funding has increased in recent years, albeit starting at a low level. For example, the SEM's budget for equipment has increased from EUR 178 000 in 2017 to EUR 509 000 in 2018 and EUR 6 300 000 in 2019. Spending on capital projects follows the same trajectory (see **Table 6**). However, as at May 2019, it is not possible to show whether operating budget (including staff) has been following a comparable growth path.

Table 6: Funding, 2017-2019 (EUR)

Type of funding	2017	2018	2019
SEM equipment and capacity building	178 000	509 000	6 300 000
Capital projects (e.g. for purchase of specialised vehicles)	7 203 000 (planned)	15 300 000 (planned)	15 860 000 (planned)
EU funds (equipment, training, campaigns)			10 150 000 (for period 2012-2019)

9 Source: https://www.preventionweb.net/files/68513_serbianationalplandrrfinal290216eng.pdf (p. 9). The majority of funding required is related to flood defences/protection works in different areas (up to EUR 700 million) and purchase of equipment for operational protection and rescue forces plus related planning (approx. EUR 300 million).

Based on the Law on DRR and EM, municipalities are obliged to develop their own DRR plans. develop their own local DRR plans. Regarding funding, the Law on Disaster Risk Reduction and Emergency Management provides that local self-government units allocate funding from their normal budget to DRR and emergency management[10]. Funding may also come from capital projects and other projects (e.g. as specified in the action plan). However, in the latter case, it should be noted that municipalities in Serbia have little means of generating their own income.

Many of the organisations interviewed for this review have also pointed out that the budget for both state and local levels is insufficient to cover their respective needs.

2.1.3 Disaster risk management authority and collaboration with national stakeholders

The SEM is the designated DRM authority in the Republic of Serbia. The SEM covers some prevention activities as well as response, while the PIMO is in charge of activities and measures in the recovery phase.

The Serbian DRM system is developed to have a good level of cooperation with all relevant stakeholders as defined by the Law on Disaster Risk Reduction and Emergency Management. The law defines responsibilities of and cooperation among all entities and resources of the DRR and emergency management system.

In 2011, Serbia formed the NEMH. As at May 2019, one of the purposes of the NEMH is to coordinate and manage prevention, preparedness and response actions related to civil protection and emergency management. The NEMH, led by the minister of the interior as commander-in-chief and the head of the SEM acting as chief officer, convenes on a regular basis (three to four times per year) and functions as a joint platform assembling relevant ministries, governmental agencies, public institutions, NGOs and commercial enterprises in coordination of emergency activities. Ad hoc operational meetings are arranged before and sometimes during emergencies. These ad hoc meetings can be followed up with operational meetings on a more technical level, if needed.

The set-up of the NEMH is mirrored in other levels of administration and government, that is at the provincial, district and local levels. LEMH are defined by law and play a primary role in prevention and preparedness and during major emergencies and disasters affecting their respective area. LEMH are led by the local mayor with support from the regional SEM office, comprising decision makers and representatives from the local government (municipality, city), fire department, civil protection units, police, army and other stakeholders and responders.

In a large-scale event that affects several municipalities or districts, the province, district or even national level will step in to coordinate emergency management. At all levels, there is the option to officially declare an emergency situation, which provides a mandate to take special measures or add additional resources. In effect, it means that capacities can be redistributed among different parts of the affected area. There is, however, an important exemption to this bottom-up approach: the national level (the government, by proposal of the MoI) has the power to declare or terminate an emergency situation at any level if the competent local authority does not act in accordance with the law.

10 Article 29, No. 5 of the Law on Disaster Risk Reduction and Emergency Management.

Since 2013, the NEMH also officially serves as the national DRR platform. Regular discussions on needs related to emergency situations as well as more general DRR issues are held in regular meetings. Every meeting leads to an official document with conclusions and recommendations, which carry legal weight. This document may serve as the basis for specific sectors and organisations to ask for more funds from the national budget or may be used to make organisations fulfil obligations in the field of DRR. For example, conclusions in such a document helped the SEM and the Ministry of Education to implement the teaching of DRR in schools.

Relevant stakeholders are involved at national as well as local level through drafting of regulations, participation in the work of the national DRR platform and active participation in the work of headquarters at different levels. Local-level experience of the 2014 floods has enhanced the knowledge of the scientific community, especially with regard to the quality of urban planning and drafting of good-quality recommendations on improvement of DRR.

Expert operational teams serve to advance the knowledge of particular risks, in particular areas useful for prevention, and have been established for landslides and erosion, for floods and for large forest fires. The staff of such teams comprise representatives of ministries, scientific institutions and other relevant organisations.

2.1.4 Observations

Legislation and strategy

Assessing the topics of legislation and strategy, the peer review concludes that:

- the legislation is comprehensive but can be improved with little effort;
- the NDRMP's Action Plan 2016-2020 should be continued with a strategy and action plan for the next four-year period.

Overall, the institutional and legal framework is coherent, comprehensive and ambitious and aligned with international frameworks such as the Sendai Framework.

In terms of legislation and strategies, the DRM framework as at May 2019 is relatively new. The new Law on Disaster Risk Reduction and Emergency Management, pivotal for the system, was adopted in November 2018. Its 43 bylaws are not yet fully completed and Serbia is nearing the end of the period of the National Programme for Disaster Risk Reduction (2016-2020).

The drafting of a new Law on Disaster Risk Reduction and Emergency Management is itself an example of good practice. With initial steps taken already after the floods of 2014, the law has been thoroughly discussed at the political level. All relevant ministries have had the opportunity to comment and revise the drafts provided by the SEM. Other relevant stakeholders have also been included in the process, something that several stakeholders, such as the SCTM and the Red Cross, have mentioned to the peers.

Some changes could be adopted to make the legislation even more comprehensive. For example, the Law on Disaster Risk Reduction and Emergency Management does not mention emergency medical services (EMS), hospitals and social services in its otherwise comprehensive lists of actors (Article 13). EMS are part of the classic everyday emergency response trio of police, fire and medical services and, in

most national systems, are considered a vital part of disaster management. However, it should be taken into account that Article 15 induces the health and social care institutions. In lower legal acts, such as the Methodology for the preparation of risk assessment and rescue plans, special categories exists with the obligation to draw up planning documents. In Article 13, these are under the term public service.

The action plan adjoined for the current (2016-2020) NDRMP is also an example of a good practice process, a multi-stakeholder approach coordinated by the PIMO, which provides a clear roadmap for future needs and priorities. However, no strategy has been produced. It would be beneficial to have such a strategy for the next four-year period, following multi-stakeholder processes coordinated by the SEM (see **Box 1**). As with the existing programme, the strategy should be complemented with an action plan.

Box 1: Legislation

Good practice:

- **G1:** Comprehensive, coherent, ambitious legislation, aligned to international frameworks, grounded in multi-stakeholder political process.

Recommendations:

- **R1:** Put forward a strategy for DRR and action plan for the next four-year period.

Funding

One of the main challenges in implementing the ambitious contents of the DRM framework is finance. As with most policy areas, in most countries there is always the problem, or risk, of not having sufficient funds to fulfil obligations, and Serbia is no different. Specifically, many municipalities are not prioritising prevention and preparedness actions, presumably because they lack the funds to do so. Adequate funding for the SEM and its equipment, personnel and activities is also lacking.

Specifically, the peer review highlights a possible risk of limited uptake of the results of internationally funded projects. Securing state funding for operating costs and for continued support of activities, know-how and equipment once the project is finished is pivotal for DRM. This includes establishing effective processes to oversee projects and their continued implementation, as well as securing that there are enough qualified personnel to implement the results of the projects, i.e. performs actual planning, trainings, exercises, and so on.

The peer review has noted that government funds, for SEM-related activities for instance, have increased in recent years, albeit from a very low starting point. Being aware of the financial difficulties, the peer review hopes that this development will continue. Also, on a more practical level, provisions should be made to further clarify and specify needs and priorities.

The peers have noted that the Serbian budget process will change to 'programme budgeting', similar to a long-term project log frame approach (e.g. the DRR Action Plan), which will hopefully support a more predictable and transparent foundation for budget allocation and prioritisation. Along the same lines, the peer review suggests ensuring that the SEM's operating costs are properly documented and assessed (**Box 2**).

Box 2: Finance for sustainability

Recommendation:

- **R2:** Secure sufficient budget and qualified personnel to manage, in a sustainable way, prevention, reconstruction and other DRM activities that are funded with external aid.

Collaboration

One of the main findings of the peer review is that there is a need for further measures to 'institutionalise' DRM in Serbia. The peers agree that many decisions and collaboration in the present system are to some extent dependent on the competencies and dedication of individuals, rather than the result of effective long-term policy based on an institutional approach, which would favour more structured analyses and multi-stakeholder participation. This is difficult to achieve in any country, especially within a field dealing with events that occur infrequently and with lots of uncertainties. Nevertheless, certain provisions could be made to make DRR work more effectively and predictably over the long term.

One of the most important aspects of this institutionalisation would be to put even stronger structures in place to facilitate two-way communication between different levels of government as well as 'horizontal' communication between stakeholders on the same level. Ad hoc meetings and structures, often top-level induced, should be complemented by more regular and 'decentralised' meetings between different stakeholders and sectors.

At the national level, and in terms of horizontal coordination between stakeholders, there is already a 'best practice' in place. The NEMH doubles as a top-level meeting platform for emergency management as well as the national platform for DRR policies (as stipulated in the Sendai Framework). The platform is a structure that, at least theoretically, provides unique opportunities to achieve policy consensus, momentum and top-level strategic direction in preparedness and prevention planning.

It seems sensible to supplement the NEMH with working-level technical operational meetings and working groups for the policy and planning side (between disasters) and technical operational staff for the coordination side (during disasters).

Regarding policy implementation and planning, as of May 2019, the peers have not had the opportunity to observe a meeting of the national platform for DRR. However, based on the peers' own experiences, it seems that top-level meetings that take place three to four times per year need to be complemented by similarly recurring mid-level coordination meetings relating to policy implementation, which should be formally linked to the top-level meetings. Such a structure and process would likely ensure a more stable and firmly grounded planning process, ultimately benefiting a more effective DRM system. Regarding coordination, the same applies during disasters.

The NEMH has auxiliary expert bodies, namely operational headquarters as well as expert and operational teams. Operational headquarters are auxiliary operational bodies for certain types of hazards, staffed with decision makers at working level, which at the time of emergency are in constant

session. They manage all operations in large-scale emergencies and have been established specifically for protection against animal diseases, pandemics, major forest fires, TT accidents, floods, extreme snowfall and ice. As there are therefore several hazard-specific operational headquarters (rather than one single generic operational staff supplemented with hazard-specific experts), it would be best if all of those hazard-specific operational headquarters have largely the same core membership in order to foster build-up of routine, expertise and cooperation, although this mostly seems to be the case already.

Expert and operational teams are working-level auxiliary expert bodies that serve to advance the knowledge of particular risks and have been established for landslides and erosion, floods and large forest fires. These teams include representatives of ministries, scientific institutions and other relevant organisations. They might provide the basis for the mentioned mid-level policy meetings.

Moreover, it would make sense to ensure a continuous multi-stakeholder approach in future processes for the National Risk Assessment, National Disaster Risk Reduction Plan, and National Protection and Rescue Plan. The ad hoc collaboration taking place, specifically between the SEM and many of the stakeholders that the peers have met, is generally regarded as positive and functions well. These connections would be stronger and more durable if linked to regularly recurring planning processes. The MoI (the SEM) is pivotal for this to happen. The Law on Disaster Risk Reduction and Emergency Management states that the MoI is responsible for drafting the National Risk Assessment, the National Disaster Risk Reduction Plan, as well as the National Protection and Rescue Plan. In the experience of the peers, multi-stakeholder participation is key to ensure valid and relevant results for these three outputs. As of May 2019, the SEM has coordinated what seems like an inclusive, multi-stakeholder risk assessment process at the national level. The same process should be repeated regularly, for instance in connection with the three-year risk assessment overview prescribed by law. The law also stipulates that both DRR plans and protection and rescue plans should be developed based on relevant risk assessments. Ideally, some provisions are made to ensure that these two outputs are preceded by additional multi-stakeholder participation, such as meetings at the 'technical' level in the framework of the national platform and NEMH (**Box 3**)

Box 3: Collaboration and coordination

Good practices:

- **G2:** Top-level meetings on a regular basis through the NEMH, which also functions as a platform for creating policy consensus and momentum for DRR.
- **G3:** Multi-stakeholder approach in process for the National Risk Assessment.

Recommendations:

- **R3:** Supplement the NEMH with suitable and regularly recurring mid-level coordination meetings for the policy and planning side (including prevention efforts).
- **R4:** Ensure multi-stakeholder approach in future processes for the National Risk Assessment, National Disaster Risk Reduction Plan, and National Protection and Rescue Plan.

.

Relationship between the SEM and the PIMO

Since its creation after the floods in 2014, the PIMO has been an efficient authority responsible for channelling funds from the international community aimed at recovery efforts to retrofit and rebuild. In effect, its efforts have also gone into and affected the prevention field. The respective responsibilities of the PIMO (recovery) and the SEM (prevention) are clearly laid out in the new law.

Yet, the line between prevention and recovery is not always clear; often, the two areas can and will overlap. In the case of the SEM and the PIMO, this does not present a problem. As of May 2019, the relationship between representatives of the two organisations seems to function well. Moreover, as an authority directly under the prime minister, the PIMO can work efficiently and help to get necessary funding for different prevention efforts in place. The SEM has a deeper institutional outreach and knowledge of local needs since it is represented at the regional and the local level through its office staff (supporting prevention efforts and preparedness planning) and firefighters.

Although the Law on State Administration generally prescribes the obligation of government entities to cooperate (see especially its Article 64 and Article 65), the current legislative framework does not seem to have specific safeguards in place to rule out any organisational clashes in the future, such as changes in leadership or management. Therefore, the peer review suggests that **Serbia considers taking institutional measures to ensure good collaboration between the PIMO and the SEM in the long term**.

This could, for example, be achieved via the establishment of a steering committee for DRR, as part of the process to prepare and monitor the new strategy. Provisions for this could be formulated in the next programme or strategy for DRR (**Box 4**).

Box 4: The SEM and the PIMO

Recommendation:

- **R5:** Provide safeguards for a good working relationship between the PIMO and the SEM, for example through a memorandum of understanding or a steering committee. This can be included in the new programme or strategy for DRR.

2.2 Regional and local collaboration

Serbia is a member of the UCPM and, together with states from the region and other countries, is a signatory to many bilateral agreements, which are then adopted by the government and made official to be used when sending or receiving international assistance.

For example, the Republic Service for Hydrometeorology in Serbia is the body responsible for the early warning system. It is directly involved in the work of many international organisations and has a very good relationship with similar institutions in the region. Through cooperation at international and regional levels, information is exchanged at all relevant events in the field of early warning, which directly affects the quality of the DRR response.

Cross-border cooperation – primarily communication concerning floods, forest fires, man-made disasters, etc. – facilitates risk monitoring and assessment of cross-border impacts that may influence Serbia and neighbouring territories.

All institutions involved in the early warning system in Serbia actively communicate with similar services in other countries via official channels. In certain cases this collaboration and communication has already been tested and was found to be of high quality (e.g. Serbia–Montenegro for forest fires, and Croatia–Serbia and Serbia–Bosnia and Herzegovina for floods).

Another 'best practice' in terms of horizontal communication, though at the local level, is the work of the SCTM, a long-standing (60 years old) association that represents and supports local-level collaboration. Through its DRM network, the SCTM has focused on specific issues, such as bringing together municipalities in river basins and catchment areas and supporting cross-border DRM activities related to flooding. Joint projects, mostly funded by international stakeholders such as the EU, have helped municipalities to develop their capacities and prevention measures, by letting the most developed municipalities lead the way, for example. In this case, 'cross-border' not only implies cross-country collaboration but also collaboration among different municipalities and districts within Serbia. Through its work, the SCTM helps to improve (the lack of) structured communication between these municipalities. Good dialogue between an association like the SCTM and the SEM (as national-level representatives) is essential for effective vertical communication.

2.3 Integration with climate change adaptation

The Republic of Serbia has adopted the National Risk Assessment for 11 different types of hazard. The risk assessment features text on climate change that causes certain disasters (extreme weather events, wildfires, floods, etc.), analysis of their frequency, and intensity and information on time scales and outputs.

The Ministry without Portfolio has the responsibility of implementing the sustainable development goals, while the Ministry of Environmental Protection has the overall competence over climate change issues, which includes adaptation as well as mitigation. The Republic of Serbia ratified the Paris Agreement in 2017 and the Ministry of Environmental Protection (MEP) is responsible for its implementation. As of May 2019, in relation to climate change, Serbia has, inter alia, organised consultations with civil society representatives under the umbrella of the first, second and third National Communications to the United Nations Framework Convention on Climate Change. These consultations were organised in cooperation with the UNDP in Serbia. Climate change adaptation (CCA) will be part of the third National Communication as well as the revised Nationally Determined Contributions, considering it was part of Serbia's Intended Nationally Determined Contributions (INDCs) as well.

Serbia is likely to adopt the Draft Law on Climate Change by the end of 2020.

To clarify, the Ministry of Agriculture, Forestry and Water Management, in cooperation with the UNDP, started the 'Advancing medium and long-term adaptation planning in the Republic of Serbia' project, funded by the Green Climate Fund, which will facilitate integration of CCA considerations into developmental planning and budgeting. In 2017, the project resulted in a stocktaking report and a plan of action to advance the National Adaptation Plan process, validated by representatives of key sectors and the MEP. The stocktaking exercise highlighted the existing weaknesses and demonstrated the prevailing barriers to CCA and DRR planning in Serbia. The results confirmed that in order to adequately address climate change vulnerabilities, Serbia must overcome its current information gaps, capacity weaknesses and its general lack of awareness of CCA – at both the national and subnational levels. The report further identified that climate change is not yet integrated into existing policies, or their associated budget priorities. A National Adaptation Plan will be one of the results of this project.

Local adaptation plans are already being drafted in some local governments while through the support of the Global Environmental Facility-funded project 'Capacity building initiative for transparency', implemented by the MEP in cooperation with the UNDP, development of local adaptation plans for Kraljevo, Zrenjanin and Ub started in late 2019. The SCTM, with the support of the UNDP, has also developed a handbook for developing local CCA plans. In addition, within the IPA project 'Climate change strategy with action plan', an adaptation planning framework (APF) has been developed that focuses on assessing the risks of climate change and extreme weather, prioritising and identifying adaptation options to reduce the severity of the key risk. In doing so, the APF can enable more efficient use of available capacities and resources to support the achievement of CCA goals. The framework also addresses the development of an adaptation plan to support the implementation, monitoring and evaluation of adaptation options. The APF is used as a step-by-step guide, with a series of questions for each step enabling the user to make progress in framing, assessing and ultimately planning best responses.

The APF consists of 3 phases and 11 steps. Also, the Draft Law on Climate Change envisages the drafting of the so-called concept of adaptation policies to identify the impact of climate change on sectors and systems, the ability to reduce the adverse impacts of climate change and to take action to reduce the adverse impacts. In addition, the draft law prescribes that this document be submitted to the ministry every four years by the relevant bodies and local self-government units. Finally, within the project 'Establishing a transparency framework under the Paris Agreement' (MoES and UNDP), it is planned to develop software for monitoring and reporting on the implementation and improvement of adaptation measures under Nationally Determined Contributions, as well as for monitoring of extreme weather events and their consequences (floods, droughts, heatwaves, fires, etc.).

As of May 2019, DRM and CCA are not strongly linked. However, with the adoption of the listed legislation (laws, National Adaptation Plan, and National Rescue and Protection Plan, etc.) the situation should improve. Specifically, the third National Communication under the United Nations Framework Convention on Climate Change, due to be submitted in 2021, will take into account the link between DRR and CCA, especially in the hydrology, water resources and agriculture sectors.

CCA measures are under the remit of various ministries. During sessions of the National Platform for DRR (i.e. the NEMH) many CCA measures are discussed and ministries can propose new measures and the modality of their implementation, for example the Ministry of Agriculture provides information measures for agricultural food, water etc. All this and other measures are discussed at the meetings of these two bodies.

3. Prevention

3.1 Risk assessment

3.1.1 Risk assessment process

The process of risk assessment consists of at least three stages: risk identification, risk analysis and risk evaluation. Risk analysis estimates the probability of hazard occurrence and the severity of its potential impact. Risk evaluation is the final step of the process and determines which level of risk is acceptable. In Serbia, the relevant hazards have been identified and some degree of risk management has been conducted in multi-stakeholder working groups, but more remains to be done in terms of a more comprehensive multi-risk assessment and of breaking this down to the local level.

The Serbian approach to risk assessment has been set out in the Law on Disaster Risk Reduction and Emergency Management adopted in November 2018. The new law aims at improving the previous Law on Emergency Situations adopted in 2009 and amended in 2011 and 2012. The Law on Disaster Risk Reduction and Emergency Management aims to improve the development of preventive activities in the area of risk management of natural and other disasters, together with the response to those events, and to ensure timely recovery and normalisation.

Following the Law on Disaster Risk Reduction and Emergency Management, the deputy prime minister and the minister of the interior formed the main working group for coordinating preparation of the National Disaster Risk Assessment (NDRA). The working group for the coordination of the NDRA comprises the state secretaries of the line ministries, as well as the directors of select organisations and services with responsibility for a given risk. Each member of the working group is the coordinator for the development of a particular risk assessment. Specific working groups for each of the hazards to be included in the NDRA have been set up at the national level. Each working group follows a multi-stakeholder approach and is coordinated by a lead ministry, institution or agency specialised in the hazard and in charge of carrying out the risk assessment. For instance, the Ministry of Agriculture, Forestry and Water Management coordinates and develops flood risk assessments, followed by risk assessments for plant diseases, animal diseases and forest fires. Each coordinator for a given hazard forms its own specific subgroup that develops a risk assessment for that hazard.

The law also prescribes that risk assessments are developed at the levels of autonomous provinces, local self-government units and entities of special importance for protection and rescue and other relevant entities (such as company units providing critical infrastructures, healthcare facilities, schools, etc.). Risk assessments are prepared by companies and other legal entities authorised by the MoI, following strict requirements and training stipulated in the Law on Disaster Risk Reduction and Emergency Management. Ultimately, risk assessments are to be approved by the MoI.

As of May 2019, 11 hazards have been identified at national level, and the working groups have produced 27 risk scenarios, of which 10 have been deemed unacceptable. However, each working group addresses the risk from its own point of view and proposes programmes based upon it. As a result, individual working groups' risk assessments are not known outside the group unless there is a multi-hazard emergency.

Therefore, a multi-risk approach to the risk assessment is needed. This is especially problematic for those hazards that could generate a cascading effect – or are the result of one – and for new emerging risks, including those exacerbated by climate change.

Examples of these include:

- IT or power disruptions leading to critical infrastructure failure;
- pandemics leading to personnel shortage at critical infrastructures, emergency services, etc.;
- floods at large Seveso-type facilities, power plants or other critical infrastructures;
- floods causing landslides;
- drought and extreme temperatures causing forest fires.

With regard to risk assessment at the subnational level, the law mandates all municipalities to conduct their own risk assessment and plans, but there is evidence of capacity differences between municipalities (as described in subsection 4.3.2) and the law does not take these differences into account. One solution to this could be better communication and cooperation among municipalities, although risk assessments are not routinely shared with neighbouring authorities. However, for flood risks, a UNDP-funded project coordinated by the SCTM tries to establish formal protocols of communication between municipalities sharing the same river basin.

Flood risk

Flooding is one of the main hydrometeorological hazards (fluvial and pluvial floods). After the devastating flooding of 2014, the Water Law was amended to include several articles addressing flood risks and potential threats arising from water. The law classifies rivers as first- or second-order waters and identifies responsibilities for their protection. At the national level, the primary responsibility for water management lies with the Ministry of Agriculture, Forestry and Water Management in the form of Republic Water Directorates (RWD), which are responsible for coordination, flood protection infrastructure and flood protection planning. At the national level, the Water Law states that accountability for the protection of first-order waters lies with the public water management companies Vode Vojvodine (for the northern provinces) and Srbijavode (for the rest of the territory), both of which have clearly divided areas of responsibility divided areas of responsibility. The second-order waters are the responsibility of the local self-government units.

Effective flood risk management will require a better understanding of the causes of different types of flooding, a quantitative assessment of probabilities of occurrence, and their expression in terms of extent, duration, depth and velocity. It is also essential to understand how flood risks will evolve over time given the effects of climate change. In addition to the already implemented, important Law on Water, a new Water Law is in development as of May 2019 that will include the entire principle of the EU Floods Directive.

According to the Flood directive and the requirements that are prescribed, RWD prepared the Preliminary Flood Risk Assessment (PFRA) which has been completed in 2012 but only included fluvial floods. Based of PFRA, 99 Areas of Potentially Significant Flood Risk (APSFR) have been defined. In the meantime, the Republic Water Dictorate started the preparation on updating and amending the PFRA. The collection of data on occurrences in the past (2012/2018) has already been completed.

Preparation of flood hazard and flood risk maps is in progress. 27 of the 99 defined Areas of Potentially Significant Flood Risk (APSFR) are already mapped within the frameworks of several different projects through different methodologies. Through IPA II Action Document 2014-2020 "Flood recovery and prevention", the rest of the flood hazard maps (FHM) and flood risk maps (FRM) of the other APSFR are made. On basis of the FHM and FRM, the Flood Risk Management Plan will be prepared. An important segment of flood risk management and the operational implementation of flood protection is the role of Public water management companies. These are responsible for the implementation of flood protection on waters that are declared as first-order water. Public water management companies are also closely related to local self-governments for second-order waters.

The RWD and the RHMSS are responsible for the early warning systems for flood risk.

Forest fire risk

Forests cover almost 30 % of Serbia, and about 50 % of them are privately owned. The primary law for the protection of forest is the Law on Forest. The law assigns responsibility for risk assessment, for the production of reports on forest fires and the maintenance of the database of burnt area to the Ministry of Agriculture, Forestry and Water Management – Department of Forestry. The law also defines the responsibility of private companies in coordinating the work on national forests and the responsibilities of local municipalities in controlling their territory. The law also contains legal obligations in forest protection and preservation for state authorities and private owners and users. Different methodologies exist for forest fire risk related to the preparation of the Forest Management Plan, which contains mitigation actions. The Forest Fires Protection Plan is implemented and already approved by the SEM.

In terms of prevention, each forest must have a fire protection plan, and several measures are foreseen to prevent, prepare for and improve protection: different fire-fighting vehicles are spread over Serbia according to need, several awareness projects are in place and a joint cross-border project with Bosnia for forest monitoring is underway. Educational projects are also being delivered in close collaboration with the SEM. One of the main risks concerns limited regulations for private forests where most of the unexploded ordnance from recent conflicts remain, especially in the south.

Despite the improvements brought by the Law on Fire Protection and the Amendment to the Law on Fire Protection, the system seems to focus mainly on the response side. The peers recommend strengthening prevention measures by improving fire-fighting infrastructure (such as creating fire corridors) and establishing continuous training programmes for private owners and public authorities. Furthermore, the peers suggest improving the regulation of private forests and educational programmes for their owners. The RHMSS provides the fire weather index, used to identify meteorological conditions in which forest fires can develop. However, this index does not take into account other important parameters (such as vegetation type) and it is mainly used as a starting point in a forecasting system. The peers suggest improving the fire early warning system by developing a more sophisticated index and using the Copernicus European Forest Fire Information System.

Extreme weather phenomena

The RHMSS provides the risk assessments for all the relevant meteorological hazards: among others, extreme temperatures, drought, hail, storm and heavy rain. The main responsibilities and duties of the RHMSS are laid down in the Law on Ministries, Law on Meteorological and Hydrological Activity, Law on Protection against Hail, Law on Water and Law on Disaster Risk Reduction and Emergency Management.

The RHMSS is also responsible for the early warning system, a multifunctional system for forecasting and monitoring extreme weather and for alerting the entire territory of the Republic of Serbia. The role of the RHMSS has become increasingly important due to an increasing trend of frequency and intensity of meteorological and hydrological hazards, as a consequence of climate change.

According to the Inform Index, one of the most important hazards for Serbia is drought; its effect on agriculture has a huge impact on the whole country. The RHMSS has conducted a complete and detailed risk assessment and analysis for drought, providing a risk matrix with the most probable and worst scenarios. Nevertheless, as of May 2019, the impacts of climate change have not yet been incorporated into the risk assessment.

Seismic risk

The Seismological Survey of Serbia is the lead institute responsible for evaluating seismic risks. The institute manages the real-time seismological network and is responsible for the production of reference hazard maps for Serbia. Although the network is rather old, it is still capable of detecting even small earthquakes, and it automatically produces a hazard map showing the recorded earthquake, but it does not provide automated information on the vulnerability of buildings. An assessment of the vulnerability of buildings was performed in 2017 using indirect data, according to the results of the last census in 2011. This non-standard procedure was chosen because data regarding the number and the type of buildings in Serbia were not available to the public at the time.

The peers recommend improving the risk analysis by not only automatically linking the hazard map with the assessment of vulnerability and exposure but also updating the assessment of the buildings with direct data.

As of May 2019, the institute is both understaffed and underfunded and needs updated instruments and training programmes for operators.

Technological risks

The MEP is responsible for assessing the risk of chemical accidents. Serbia has about 110 Seveso facilities, or complexes, and operators are required to prepare (depending on the quantities of hazardous substances) a Safety Report and a Plan of Accident Protection (for so-called 'upper tier' complexes), or an Accident Prevention Policy (for so-called 'lower tier' complexes). In its administrative procedure, the MEP approves the Safety Report and the Accident Protection Plan, while implementation of the Accident Prevention Policy is checked during any inspections arising from an accident covered by the Environmental Protection Act. As at May 2019, the MEP is preparing a Law on the Control of Major Accident Hazards Involving Dangerous Substances for the full transformation of the EU Seveso III Directive, including Annex I of that directive, which defines dangerous substances and their limit quantities already fully implemented in the existing legal framework. The MEP cooperates closely with other ministries and the SEM, with the aim of preventing major accidents, always considering the external sources of hazards that could cause chemical accidents (for example earthquakes and floods).

The Ministry of Interior, Sector for Emergency Situations, is the competent authority for the prevention of accidents with hazardous materials within non-seveso establishments.

It is worth mentioning that technological accidents have a wider scope than merely seveso and non-seveso. Deriving from the Law on disaster risk reduction and emergency management (Art.2, first paragraph, point 3), "technological accidents are sudden and uncontrolled events that escaped control when handling dangerous substances in the production, use, transportation, trade, processing, storage and disposal".

Landslide risk

The landslide risk in Serbia is small and is mostly an issue as a cascading effect (i.e. from flood or earthquake). For example, during the 2014 floods, the combination of heavy rain and soil saturation caused landslides in both inhabited and uninhabited areas and destroyed houses, roads and bridges.

The State Geological Survey is responsible, as defined by the Law on Mining and Geological Surveys, for the assessment of landslide risk and for drawing up geological maps of hazards and risks. Nevertheless, the law does not clearly define obligations and competencies at either the national or local levels.

The peers have not had any direct meetings with the State Geological Survey nor have they seen an example of a Serbian landslide risk assessment. The Beware project, funded by the UNDP and the Japanese government, aims to harmonise landslide data and improve the training of municipalities for monitoring. In addition, the State Geological Survey and the Faculty of Geology and Mining at the University of Belgrade are collaborating on a project to catalogue and describe landslides in a national register, a useful activity for future analysis and creation of hazard and risk maps.

As mentioned above, each working group carries out a single-risk assessment with a specific approach and methodology. The peers recommend this single-risk approach be changed to a multi-risk approach. However, there are some examples of hazards (floods, chemical accidents) for which cascading effects are taken into account.

3.1.2 Integration in overall risk management

At the beginning of an NDRA process, it is recommended to perform a prioritisation process for the risk analysis in order to respond quickly to the most dangerous hazards. As of May 2019, a true risk analysis has only been carried out for flood risks and chemical accident risks.

The flood risk assessment process is well defined. Good legislation, good international agreements among actors sharing the same basins (the Danube, Drina and Sava), several EU-funded projects (IPA FLOODS, IPA DRAM) and the support of the World Bank and other donors enable MAFWM and its RWD to have a good and innovative risk assessment for at least the first-order waters. Local authorities, responsible for the second-order waters, have conducted their risk assessments for some rivers with the help of the PIMO and the World Bank. This assessment should be done for all the small rivers.

However, even in this favourable scenario, more effort is needed. It is recommended to strengthen capacities at the local level through training, provide experts for helping the local authorities, raise awareness among citizens and establish communication between neighbouring administrations (**Box 5**).

Box 5: Integration of overall risk management

Good practices:

- **G4:** All the relevant hazards have been identified and specific working groups have been established for each hazard.
- **G5:** Each working group has a coordinating institution responsible for risk assessment. Different ministries, institutions, agencies and other stakeholders, both at the national and local level, work jointly in the same working group.
- **G6:** Development of comprehensive and holistic legislation on risk assessment that clearly defines and specifies responsibilities and tasks at a national and local level.
- **G7:** The new legislation takes account of all international obligations at European and global levels.

Recommendations:

- **R6:** Develop a more comprehensive and strategic approach to risk analysis through multi-risk analysis and new emerging risks resulting from climate change. Cascading effects should also be accounted for, including IT or power disruptions leading to critical infrastructure failure, cascading effects resulting from pandemics and flood risks at large industrial Seveso-type facilities, power plants and other critical infrastructure.
- **R7:** Governments and agencies cooperate actively in the risk assessment process both among themselves and with the SEM, but there are few formal agreements in this regard. It is therefore recommended to strengthen these collaborations establishing formal agreements between administrations.
- **R8:** To avoid each working group having its own methodology and approach, improve overall coordination in the risk assessment process to ensure that the various risk assessments are consistent across the individual working groups.

- **R9:** Link national with local risk assessment by providing, for example, templates and guidance or joint training. Promote information exchange on risk assessment between neighbouring municipalities and districts and strengthen their collaboration. Make the risk assessment process a shared process that accounts for differences in capacity. The national authorities responsible for the process should provide the necessary help.
- **R10:** Complete the risk identification and risk analysis for the other hazards (landslides and mudslides) and the development of flood maps for the second-order rivers.
- **R11:** Improve the level of expertise at a local level with specific training in order to help the municipalities in timely preparation of capital projects (the PIMO and the World Bank have already helped the municipalities; this project-based increase in expertise should be institutionalised on an ongoing basis).
- **R12:** Provide expertise to local communities to set up mitigation measures for small rivers prone to more frequent flash floods as a result of climate change.
- **R13:** It is recommended to improve education on prevention at all levels and to promote active citizen participation in relevant meetings (mainly for flood and forest fire risks).
- **R14:** It is recommended to implement the fire weather index with the definition of a more sophisticated index and use of the European Forest Fire Information System.
- **R15:** Improve the regulations for private forests and educational programmes for their owners. The peers also suggest improving the construction of fire-fighting infrastructures such as fire corridors.

3.1.3 Collection and use of data

Although a large amount of data are being collected and several portals and systems have been set up, are being established or are planned for, data sharing remains a challenge.

The risk assessment process requires an accurate recording of previous disasters and data losses in terms of casualties, property, environmental and economic damage; it is an extremely data-intensive process that needs to involve a wide range of stakeholders.

Article 22 of the Law on Disaster Risk Reduction and Emergency Management requires the establishment of the Disaster Risk Register containing the relevant data for risk management. The law prescribes the content, the manner of establishment and the maintenance of the Risk Register, and tasks the SEM with the coordination of data collection. It also obliges all the relevant ministries and stakeholders to provide their data and to keep them up to date.

In the Republic of Serbia, several administrations collect and record their data on hazards. For example, the Ministry of Agriculture, Forestry and Water Management – Forest Administration has an updated database of burnt areas and has started to collect and analyse data on forest fires in cooperation with the scientific community. The RWD collect data on floods, the RHMSS collects meteorological and hydrological data and, at the local level, municipalities have their own local historical loss data.

Despite this large number of portals and systems at the national and local level, **data sharing remains a considerable problem and suffers from a lack of formal agreements among various administrations, national agencies and private stakeholders at both national and local level. The recommendation is to establish formal and consolidated agreements among different national and local administrations and the SEM, which would coordinate the process**. In addition, new data and analyses are created during risk assessments, so it is therefore necessary to develop a strategy to organise and manage data effectively as soon as they become available.

Serbia is making a considerable effort to collect and record the disaster loss data in the Desinventar database, which is largely compliant with UNDRR requirements. This activity is an important starting point for meeting EU requirements in recording loss data. The SEM consolidates data from several stakeholders and then standardises them in collaboration with the Statistical Institute, which also has the task of entering them into the Desinventar database. A project is also underway between the Statistical Office, the SEM and local self-government units and ministries to collect the historical data from 1980 onwards for inclusion in the Desinventar database.

The Republic Geodetic Authority (RGA) will have the role of establishing and maintaining the technical infrastructure for access and use of data from the Risk Register, following the regulations governing the area of national geospatial data infrastructure. The digital geospatial platform, already visible on the RGA and National Spatial Data Infrastructure website and containing 225 various data sets from national stakeholders as of May 2019, will provide data and maps and will be critical in assessing vulnerability. The platform, together with the legal and technical framework of the National Spatial Data Infrastructure, will serve to link with other necessary data and will serve to form a Risk Register. The Risk Register is a subsystem of the National Spatial Data Infrastructure system. Accordingly, working groups with relevant stakeholders will be set up as the necessary bylaws are being prepared.

As of May 2019, creation of the Risk Register is yet to begin. A working group has been set up for the legal framework and two bylaws have already been established (one for the design of the infrastructure and one for collecting and sharing data), but there is not yet a specific working group defining the kind of data that should be included in the Risk Register, as well as defining other requirements that influence the system architecture and that are a prerequisite for the establishment of the Risk Register.

The peers recommend strengthening the collaboration between RGA and the SEM in order to accelerate the process of establishing and defining the requirements of the Risk Register and to define the technical infrastructure.

The RGA has the technical capacity to support and maintain the Risk Register once it is in place. The peers suggest that it should be supported operationally and financially to improve its technical capacity and enable the standardisation of data.

Data sharing and communication are other relevant issues in a risk assessment process. The peers have evidence of a good collaboration between administrations, but more needs to be done to institutionalise this. The recommendation is to establish formal and consolidated agreements among different national and local administrations and the SEM, which will coordinate the process. In particular, the peers suggest setting up a technical subgroup that helps to connect the local self-government units (**Box 6**).

Box 6: Collection and use of data

Good practices:

- **G8:** Collecting and recording the disaster loss data in the Desinventar database is an important starting point. It is compliant with the Sendai Framework and EU requirements and already contains the historical data
- **G9:** The RGA already has the technical capacity to support and maintain the Risk Register once it is established.

Recommendations:

- **R16:** Carry out a gap analysis of the necessary data vs available data to complete the risk assessment process.
- **R17:** The peers recommend strengthening collaboration between the RGA and the SEM to accelerate the process of establishing and defining the requirements of the Risk Register and to define the technical infrastructure. A specific working group should be set up to define the type of data to be included in the Risk Register, standards for those data and necessary functionalities of the Risk Register and National Spatial Data Infrastructure platforms.
- **R18:** The historical data contained in the Desinventar database may be relevant in the risk analysis. It is recommended to conduct an analysis of the data recorded in the Desinventar database and to link them to the Risk Register.
- **R19:** The RGA has already introduced the geospatial platform Geosrbija containing public sector spatial data through a World Bank-funded project. It is recommended to support RGA operationally and financially, improving the RGA budget for the formation and maintenance of tools after the end of the project.
- **R20:** Although peers have evidence of good collaboration between administrations for data sharing, they recommend establishing formal and consolidated agreements between the SEM and the several national and local administrations involved in the process. Peers also suggest setting up a technical subgroup to connect to the local self-governments. Establish a formal procedure of sharing digital data among the different administrations and stakeholders.
- **R21:** It is recommended that the data recorded should be fully opened both technically and legally, that is the data should be released in a way that allows any device or software to read it, they must follow open standards and must be reusable (Open Data for Resilience Initiative: Field Guide, Global Facility for Disaster Reduction and Recovery 2014).
- **R22:** Several projects for the digital data are in progress that have an impact on the Risk Register, for example the World Bank project, the Electronic Regional Risk Atlas (IPA DRAM) database or the data collected in the Desinventar database, and a planned Japanese project. It will be important to ensure the interoperability of all these databases with the future Risk Register.

This is in addition to the "Disaster Risk Management Support for End to End Early Warning System Project, TF A4344" (from the Swiss grant implemented by the World Bank and PIMO) to support municipalities in assessing disaster risk and rescue planning which developed Disaster Risk Information System (DRIS). The development of DRIS secures the collection of data on potential risks from local self-governments at one place, establishes a digital database that provides a clear picture of the situation, aims to provide an efficient reaction on every level and enables accurate updates. DRIS has two levels of access:

1. Municipality role - users can change, add and update all relevant data in the platform regarding Risk assessment and Protection and rescue plan;
2. Nationwide role – users can access the Protection and rescue plan and Risk assessment in read-only mode for all municipalities (for example SEM, PIMO, Ministry of finance).

Another project with GFDRR WB from Japan Grant is adding Disaster Risk Reduction Plans to the Platform. Furthermore, all municipalities are being trained to develop DRR Plans. DRIS is a very powerful instrument in collecting and assessing all the DRR data on a local level that will be connected to the Disaster Risk Registry. DRIS will not only help in assessing risk and responding but as well in prevention planning, both on local and national level. It could be of use from micro to capital investments and ensures that risk information is part of planning process. Usage and further development of DRIS is therefore crucial.

3.1.4 Stakeholder consultation

As described in subsection 2.1.3, relevant stakeholders are involved in the risk assessment process at a national and local level through the drafting of regulations and participation in the working groups. The involvement of stakeholders in the process of risk assessment is considered good practice and ensures that information is shared among stakeholders in the same working group and between them and the SEM.

However, there are some issues. First, as mentioned, there is a lack of communication between different working groups and therefore among various stakeholders, even if some of them collaborate informally. Second, there is limited (and not systematic) involvement of universities, research institutes and scientific experts with clear responsibilities and roles in the risk assessment process. Participation of the scientific community is crucial to understand risks, new emerging risks due to climate change and the adaptive measures for them. Civil society should also be involved with representatives of the most vulnerable groups and women's groups[11]. Over the years, international and local donors such as the UNDP, Unesco, the European Commission and World Bank, among others, have played a tremendous role in disaster prevention and mitigation. Since the 2014 floods, these donors have collaborated closely with the Serbian government and have contributed to significant improvement in the emergency and recovery phases. The Red Cross has also played an important part, and the help it provided was crucial in 2014 and in more recent disasters. The peers stress how important it is to include such organisations in the process of risk assessment, taking advantage of their expertise in working with vulnerable groups in particular. One positive factor for cooperation is that the Red Cross and other international stakeholders already work with the NEMH (**Box 7**).

11 Some studies stress the role of women in preparedness and response to disaster risk in Serbia, especially related to flood risk. One example is available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6313390/.

Box 7: Stakeholder consultation

Good practices:

- **G10:** Many institutional stakeholders such as ministries, agencies and national institutes, firefighters and local authorities are involved in the working groups for the preparation of risk assessment.
- **G11:** The risk assessment is a sharing process inside the working group.
- **G12:** The law assigns clear responsibilities and roles for the involved entities for the risk management structure, that is the ministry or agency coordinating the working groups.

Recommendations:

- **R23:** Poor communication among the different working groups is an issue as at May 2019 and, as a result, the various stakeholders are not well connected so information is not being shared effectively.
- **R24:** Even if there are some important cases in which communication worked and data were shared – e.g. flood defences for large river basins (Danube, Drina) and for some smaller basins – a standard protocol for data sharing is absent.
- **R25:** The participation of the scientific community is crucial to understand risks, new emerging risks due to climate change and the adaptive measures required for them. It is recommended to strengthen collaboration with scientific and research organisations, establish formal agreements and include them in the whole process of risk assessment.
- **R26:** The Faculty of Security Studies at the University of Belgrade, which has a specific Master of Science in Risk Assessment, Disaster Risk Management and Civil Protection, is however not involved in the drafting of the laws or in the working groups for the risk assessment. Full integration of the Faculty of Security Studies as an essential stakeholder is recommended.
- **R27:** It could be important to include most relevant international stakeholders in the process of risk assessment, at least for their knowledge and expertise of vulnerable groups.

3.2 Risk management planning

3.2.1 Risk consideration in policies and planning

Risk management planning is the overall set of measures needed to implement strategies and specific actions that can control and minimise the risks identified in the previous risk assessment process. This is a fundamental step in the DRR strategy and it involves various economic, political and social fields. Evaluating and prioritising the risks should be done right at the beginning of the NDRA process in order to respond quickly to the most dangerous hazards. In light of Serbia's disaster risk profile, and especially with regard to the country's recent history, it seems reasonable that much work has been done first and foremost for flood and wildfire risks. As mentioned in the previous chapter, the risk assessment focuses on single risks with no overarching multi-hazard risk assessment in place, except for floods and technological risks that account for cascading effects or multiple hazards. Nevertheless, proper risk identification, analysis and evaluation have been completed for flood risk and chemical accident risk only.

At the national level, some projects and studies focusing on flood risk management are conducted both with national resources (e.g. the study on flood defence of the West and South Morava and other basins) and with the support of international organisations (e.g. flood defences in the Kolubara river basin with the UNDP and the Japanese government). In addition, several projects for the implementation of structural measures, such as new embankments or construction of torrent check dams, are underway in collaboration with the EU, the World Bank and the PIMO.

There are also a few measures for preventing flooding of second-order rivers. For example, in the municipality of Obrenovac, which was completely flooded in 2014, new regulations require construction of new buildings one metre above the road or with electric pumps on the top floor. However, as of May 2019, there are not yet any flood protection measures for the strategic Tesla power plant, which produces about 30 % of the nation's electricity. Many projects are also planned in collaboration with international organisations and stakeholders to increase the safety of citizens and property. Despite these examples of best practices, in the opinion of the peers, few policy recommendations and only isolated measures are provided in policies and planning.

Best practices in flood prevention include several international cross-border initiatives, such as the International Commission for the Protection of the Danube River or the inter-municipality projects sharing the same basins coordinated by the SCTM and supported by the UNDP, the PIMO, Caritas and several ministries. This last important project establishes so-called River Basin Protocols of Cooperation between towns and municipalities (the agreement has already been signed by 26 towns) sharing common flood risks. As of May 2019, all those projects and studies are still in progress.

Regarding forest fire risk, the Law on Forests states that all forests must have their own protection plan, which should specify the duties of the forest utility organisation employees, describe the degree of risk in the area and provide information on the technical infrastructure for visitors. Remarkable cross-border projects exist in this field. One example is the 'Joint combating and monitoring of forest fires in Western Serbia' project between Serbia and Bosnia and Herzegovina, which aims to monitor the area using drones.

The peers have no evidence of actions in terms of risk consideration and risk planning other than for forest fire and flood. For example, with regards to drought risk, there is no evidence of a land use plan or, for seismic risk, evidence of measures for new, safer buildings.

Furthermore, although the principle of Build Back Better is embedded into the Law on Reconstruction following Natural and Other Hazards, as of May 2019 it is unclear how this approach is implemented in the design and maintenance of the DRM infrastructures.

3.2.2 Evaluation of disaster losses

As mentioned, the Risk Register has not yet been established. However, the SEM has made a considerable effort to systematically record disaster loss data in the Desinventar database from 2013 onwards[12]. As a result, the impacts of disaster losses have not yet been systematically evaluated.

12 Desinventar is a tool that helps to systematically analyse disaster trends and their economic, social and environmental impact, and can support risk modelling until the Risk Register is ready.

3.2.3 Risk management planning process

The process of assessing national risk, as mentioned, is managed by working groups considering specific hazards. All relevant national stakeholders collaborate in the identification, evaluation and analysis of risks and in the preparation of the National Risk Assessment. Private and public stakeholders are involved, as established by the Law on Disaster Risk Reduction and Emergency Management, and in the elaboration of disaster preparedness and contingency plans (**Box 8**), as described in detail in the next chapter.

Box 8: Risk management planning

Good practices:

- **G13:** Prioritisation of risks, to respond quickly to emergencies.
- **G14:** There are many cross-border projects that aim to improve collaboration with the neighbouring countries sharing the same river basins (Danube, Drina and Sava), or for the monitoring of forest fires.
- **G15:** There are several projects that work to improve collaboration among municipalities that are situated along the same river (coordinated by the SCTM).
- **G16:** Implementation of some local legislation and agreement for preventing flood risks.
- **G17:** Raise awareness about flood risks in the smallest municipalities.

Recommendations:

- **R28:** Strengthen the prevention measures for strategic infrastructures (e.g. the Tesla power plant).
- **R29:** Strengthen the established inter-municipal projects with more formal agreements for taking joint actions.
- **R30:** Extend the inter-municipal projects to all Serbian municipalities and to neighbouring country municipalities sharing the same catchment area.
- **R31:** Support communication between local administrations and coordinate the DRM plans (where they exist) between neighbouring municipalities.
- **R32:** Provide private forests with the necessary prevention infrastructures.
- **R33:** Systematically record and share disaster loss data and improve the recording of historical data in the Risk Register to support the risk assessments, in particular the development of scenarios.
- **R34:** Use existing international guidance to develop a policy on data collection ('Guidance for recording and sharing disaster damage and loss data', Joint Research Centre, 2015).

4. Preparedness

4.1 Disaster preparedness and contingency plans

As of May 2019, detailed disaster preparedness and contingency plans were quite limited in number. However, many plans are still in development and several important aspects appear to be sufficiently covered, especially those parts prescribed by law. Other aspects are still to be analysed in depth. Most importantly, one should check that the plans describe a clear, cross-sector coordinated system that allows for gradual escalation of response, from everyday emergencies to full-scale disasters. This is explained in more detail in the following sections.

4.1.1 Availability of elaborated plans

Generally, the Law on Disaster Risk Reduction and Emergency Management provides for the elaboration of so-called protection and rescue plans (Article 17) as well as external accident plans for certain facilities (Article 18). The protection and rescue plans are to be based on a risk assessment and shall contain the following components:

- early warning and preparedness
- mobilisation and activation
- protection and rescue by type of hazard
- civil protection measures
- use of forces and objects for protection and rescue.

In the Action Plan for the Implementation of the NDRMP, the National Protection and Rescue Plan was envisaged to be ready by mid-2017. The Law on Disaster Risk Reduction and Emergency Management stipulates that the National Protection and Rescue Plan be adopted at the latest 90 days after the adoption of the National Risk Assessment, which was in February 2019.

As at May 2019, the National Protection and Rescue Plan is still in preparation. At the local level, 130 out of 174 local self-government units have completed or initiated their risk assessment, which constitutes the first step of the planning process. The risk assessments are planned to be completed by the end of 2020. At the time of the field mission, 15 out of 174 local self-government units have developed a protection and rescue plan, of which 10 have been approved. The Ministry of Health is currently developing its Emergency Response Plan, according to information received from the MoI's SEM.

4.1.2 Elements foreseen in the law

As the peer review team has not been provided with any plans, the review can only be based upon what, with regard to the plans, is stipulated in the law.

Ideally, disaster preparedness and contingency plans meet the following criteria[13]. They should:

1. be based on a risk assessment;
2. form a thoroughly orchestrated cascade of disaster preparedness and contingency plans for a broad range of stakeholders at different levels (national, provincial, local);
3. be regularly updated;
4. allow for predefined gradual augmentation of response and cover the following aspects:
   - ▷ actors, roles and responsibilities, capacities and resources,
   - ▷ coordination, communications, information management,
   - ▷ risk monitoring, early warning, early action, operations.

The Law on Disaster Risk Reduction and Emergency Management already addresses the above-mentioned points 1, 2 and 3. According to the law, the protection and rescue plans are to be based on a risk assessment. This should provide for a thorough grounding of the protection and rescue plans once the risk assessments have been completed. At the time of the field mission, 84 out of 174 local self-government units have carried out a risk assessment, 76 of which have been approved.

Regarding Point 2, the law provides that protection and rescue plans be developed at the national as well as at the provincial and local levels. For the national level, the law specifies that the protection and rescue plan be developed by the MoI, in cooperation with line ministries, special organisations and other legal entities. Protection and rescue plans are also to be drafted and issued by all entities that are obliged to draft risk assessments including, for example, healthcare facilities, social welfare institutions and schools. In addition, external plans of protection for major accidents are to be drafted and adopted by local self-government units for Seveso complexes of higher order in their territory. All these obligations ensure that plans are developed by a broad range of stakeholders.

It will be a challenge to ensure that the various plans form a coherent framework. Ideally, there will be a coherent framework of DRR strategy, corresponding legislation and plans. The government will be responsible for this, as per Article 24 of the Law on Disaster Risk Reduction and Emergency Management. It is explicitly stated that the government provides for combining parts of the system (which includes the plans) into a single system. This is ensured using two mechanisms. First, the emergency situations headquarters reviews protection and rescue plans and other planning documents and provides recommendations for improvement, which ensures broad stakeholder involvement. Second, central, or at least higher-up, oversight: the National Protection and Rescue Plan is to be passed by the government, the protection and rescue plans at the provincial and local levels are to be approved by the MoI and the external accident plans are to be adopted by the local self-government units.

13 Based on the UNDRR draft Sendai Words Into Action Guide on Disaster Preparedness Frameworks (unpublished as of May 2019); see also the Inter-Agency Standing Committee draft Emergency Response Preparedness Guidelines at https://interagencystandingcommittee.org/iasc-transformative-agenda/documents-public/iasc-emergency-response-preparedness-draft-field-testing.

A regular update of plans is also provided for in the law, which stipulates that protection and rescue plans must be periodically updated in accordance with needs and with new circumstances and must be completely redeveloped and adopted every three years.

In terms of legal requirements for disaster preparedness and contingency plans, it remains unclear which legal obligations exist to develop and coordinate hospital mass casualty incident plans. Hospital mass casualty incident plans prepare hospitals for an unusually high influx of patients during disasters. The plans make sure that the disaster is not, alongside the transported patients, transferred from the field to the hospital. The Law on Disaster Risk Reduction and Emergency Management does not stipulate obligations to develop and coordinate hospital mass casualty incident plans. If such legal obligations are not provided for by other laws, this would be a major setback. In any case, hospital mass casualty incident plans are to be carefully orchestrated with the protection and rescue plans.

4.1.3 Elements to be elaborated

Not prescribed in the law, and to be considered when elaborating protection and rescue plans and external accident plans, is Point 4 of the list above (subsection 4.1.2): plans that allow for gradual augmentation of response and cover the following aspects.

Actors, roles and responsibilities, capacities and resources

Relevant actors, including extra-governmental and other specific actors (such as Red Cross, NGOs, the private sector) are to be listed with their contact persons and contact details, their roles and responsibilities and their capacities. Additional capacities, resources and useful facilities are also to be listed, such as shelter capacities, global water sanitation and hygiene, food, sandbags or hazardous material equipment.

Coordination, communications, information management

Regarding coordination, plans should generally define both the horizontal division (agencies involved as listed under actors) and the vertical division (chain of command). They should define mechanisms of coordination and their interaction, including coordination committees, operational–tactical staff, 112 centre and organisation-specific emergency operations centres, as well as civil–military coordination. In Serbia, this would, to a large part, be centred on the emergency situations headquarters at the various levels. For large-scale disasters, it would be important to establish how (at least during daytime) permanent operational–tactical staff would operate and how to coordinate them with ad hoc meetings of the emergency situations headquarters. This would include definitions of standard staff functions – much like the military general staff system with its G1–6 functions – communication procedures and decision-making protocols.

Regarding civil–military coordination, the Serbian Armed Forces are represented in the NEMH and the National Platform for DRR. The Law on Disaster Risk Reduction and Emergency Management stipulates that military assets are only used for protection and rescue when civilian forces are insufficient. In that case, military units are directed by their own commanders, in accordance with the emergency situations headquarters.

Regarding communications and information management, plans should provide details on reporting lines, information platforms and technical communications, along with providing easy-to-use reporting templates. Plans should also define the kind and amount of data to be collected during needs assessments, again together with easy-to-use assessment templates.

Risk monitoring, early warning, early action and operations

Risk monitoring indicators, alert levels, appropriate early action, and response operations defined in the plans should draw up a system that allows for gradual augmentation of response: from everyday emergencies to large-scale disasters requiring international resources. Alert levels need to align with this system and thus could be organised along the lines of:

- everyday emergencies;
- large-scale emergencies to be covered with local resources (with possible sublevels depending on area, objects and population affected);
- large-scale emergencies to be covered with regional resources;
- large-scale emergencies to be covered with national resources;
- large-scale emergencies requiring additional international resources.

Within such a system, risk monitoring indicators (e.g. flood levels and the affected population) trigger predefined alert levels and activate plans (protection and rescue plans at the appropriate level, possibly external accident plans, and possibly specialised sub-plans for specific hazards such as earthquake, pandemic diseases, etc.), with corresponding early warning, early action and continued response operations. Early action would ideally be triggered before the disaster and may entail measures such as evacuation, pre-positioning of relief goods, pre-dispositioning of response teams, etc.

Early action would also include the release of the necessary funding for those measures, such as forecast-based financing (FbF). As of May 2019, FbF is developed and field-tested by the German government, the Red Cross and Red Crescent Movement and the World Food Programme[14]. It takes scientific forecasts (mainly extreme weather forecasts) as a basis for decision-making and setting up an automatic early action and funding mechanism: once a predefined threshold is met, corresponding immediate preparedness measures are taken before the disaster strikes (e.g. building protection measures, prepositioning of relief items, etc.) and the necessary funds are released. An appropriate fund (or a similar funding instrument) accompanies this mechanism. Thereby, FbF can save valuable time, and can drastically reduce human suffering and economic losses. In the future, it might be a possibility for Serbia to become part of the FbF system that is currently being developed.

Beyond early action, actual response operations need to be scalable to higher-level plans from local to national, depending on how the disaster develops. Therefore, within each plan, linkage between the plans at the different levels needs to be defined.

14 See https://www.forecast-based-financing.org/, https://docs.wfp.org/api/documents/WFP.../download and https://www.drk.de/fileadmin/user.../FbF-A_policy_overview.pdf for an overview. A step-by-step manual is provided at https://www.preventionweb.net/educational/view/58309.

Within each plan at each level, there should be predetermined thresholds (such as area, objects or population affected) linked to exactly defined resources to be deployed (as specific as possible, e.g. what type of unit from which area). **Table 7** serves as an example of how this might look in many emergency systems for the emergency levels mentioned above (everyday emergencies and large-scale emergencies to be covered by everyday/local/regional/national/international resources).

Table 7: Example thresholds and resources of individual emergency plans

Emergency level	Example	(Additional) Resources
Everyday emergency	Individual medical emergency	Local ambulance of defined type Local hospital
	Smaller fire	Local fire unit(s) of defined type
Large-scale, local resources	Medical mass casualty incident with a defined number of patients	Local ambulances of defined type Local mass casualty incident team Local predetermined hospital(s), possibly throughout region
	Larger fire	Local fire units of defined type
Large-scale, regional resources	Medical mass casualty incident with a defined number of patients	Local ambulances of defined type Local mass casualty incident teams, drawn together in a predefined manner (without leaving home area completely uncovered) from different locations throughout the region Local predetermined hospitals throughout region
	Major fire with major hazardous material component involved	Local fire and hazardous material unit(s) of defined type, drawn together as above
Large-scale, national resources	Medical mass casualty incident with a defined number of patients	National, regionally pre-deployed ambulances and mass casualty incident teams of defined type, drawn together as above Local predetermined hospitals throughout country
	Major fire with a chemical, biological, radiological and nuclear component	National, regionally pre-deployed chemical, biological, radiological and nuclear units Local fire units of defined type, drawn together in a predefined manner (without leaving home area completely uncovered) from different locations throughout the country
Large-scale, international resources	Medical mass casualty incident with a defined number of patients	Field hospital of defined type
	Major forest fire	Fire-fighting aircraft

The use of international resources should be carefully integrated into the National Protection and Rescue Plan, preplanning and defining in which specific cases what type of international resources would be needed, including, for example, which kind of UCPM modules may be needed or which level of World Health Organization emergency medical teams. One can see from the example of the World Health Organization emergency medical teams, where the highest level replaces a complete referral hospital with several operation theatres, that careful planning with relevant stakeholders is essential – in this case including the Serbian health authorities as relevant stakeholders. The relevant linkages with the international coordination mechanisms will need to be created in the National Protection and Rescue Plan as well, including cooperation with, and partial establishment of, structures such as On-Site Operations Coordination Centres, Reception Departure Centres, Urban Search and Rescue Coordination Cells and Emergency Medical Team Coordination Cells (see **Box 9**).

Box 9: Future protection and rescue plans

Good practices:

- **G18:** The Law on Disaster Risk Reduction and Emergency Management already stipulates useful requirements for the future protection and rescue plans and external accident plans: they are to be based on a risk assessment, foster broad stakeholder involvement and orchestration of plans through involvement of the emergency situations headquarters and through higher-up oversight, and the plans and are to be regularly updated.

Recommendations:

- **R35:** Develop the missing protection and rescue plans and external accident plans in a cross-sector, coordinated and inclusive process involving all relevant stakeholders, covering the requirements stipulated in the Law on Disaster Risk Reduction and Emergency Management, and allowing for gradual augmentation of response and covering the following aspects as specified in the actual report text:
  - actors, roles and responsibilities, capacities and resources;
  - coordination, communications, information management;
  - risk monitoring indicators, alert levels, activation of plans, early warning, early action and continued response operations.
- **R36:** Carefully integrate international resources into the National Protection and Rescue Plan, preplanning and defining in which specific cases what type of international resources and structures are most needed.
- **R37:** Coordinate with the Ministry of Health to make sure that plans are coordinated and that hospital mass casualty incident plans are in place, preparing hospitals for an unusual high influx of patients during disasters.

- **R38:** Develop a draft protection and rescue plan template in order to help the provincial and local levels draft their plans. Supplement the plans with easy-to-use and adaptable standard operating procedures, checklists and templates for all relevant stakeholders, again to be developed in a common stakeholder process. In the long run, consider introduction of a bottom-up, algorithm-based quality management system, developed in a common stakeholder process including all levels, and designed as an evolutionary system to be further developed through input from personnel.
- **R39:** In the medium to long run, consider introducing an FbF system in Serbia (currently being developed in other countries).

4.2 Early warning

Regarding early warning and forecasting capacities, the siren system and the 112 centre are yet to be completed as of May 2019.

There seems to be relatively limited forecasting capability available, with the notable exception of floods. The RHMSS is capable of timely issuing of meteorological and hydrological warnings, ranging from early announcements to emergency alerts. Alerts are distributed via email, SMS and on the RHMSS website. Part of the RHMSS website is the meteoalarm.rs website, developed as part of the European meteoalarm.eu project. The website displays information on expected meteorological or hydrological events through a colour-coded pictogram representing the expected hazard level (green = without warning, yellow = potentially dangerous, orange = dangerous, red = very dangerous). The criteria for issuing an alert are predefined and in line with neighbouring countries participating in the project. Additional resources, both in terms of measuring equipment, instruments and software tools and in increasing the number of experts, would further strengthen the functioning of the Hydrometeorological Early Warning and Alert System.

Regarding earthquakes, as mentioned in subsection 3.1, the Institute of Seismology of Serbia produces reference hazard maps for the whole Serbian territory and manages the real-time seismological network, which automatically relays information about earthquakes over Magnitude 5 on the Richter scale to the NEMH. Although it is theoretically possible to issue a warning a few seconds before an earthquake in order to shut down gas pipelines, close bridges etc., the Institute of Seismology does not have this capability due to a lack of corresponding technical infrastructure and personnel. Indeed, the lack of personnel (especially the lack of replacements for expected retirements) even threatens the (24/7) operational capacity as at May 2019.

There is a national siren system, which remains to be completed. Warnings are collected at the NEMH, and from there forwarded to the respective local entities activating the sirens. A few years ago, responsibility for the sirens was delegated to the municipalities. According to the Law on Disaster Risk Reduction and Emergency Management, local self-government units shall develop an acoustic study on the coverage of the public warning system for their territory by 2021 and shall procure, install and

maintain sirens accordingly. However, funds for this have not been provided. As of May 2019, therefore, the public siren system appears to be patchy. For example, in many rural municipalities, the SEM issues early warnings via mobile networks rather than through the siren system.

One example of an entity activating the sirens is the Republic Information Centre (1985 Centre) based in Belgrade. The Republic Information Centre serves as a central coordinating node for the centres receiving fire, ambulance and police emergency calls. Currently, the Belgrade centre can activate 118 pneumatic sirens. After having carried out an acoustic study, they are going to be replaced by 317 electric sirens, which can also be used as a public address (loudspeaker) system.

Although provided for in the Law on Disaster Risk Reduction and Emergency Management, there is no functional centre yet that would receive incoming emergency calls via the European emergency number 112.

Box 10: Early warning – RHMSS and Seismological Survey

Good practices:

- **G19:** The RHMSS can issue timely meteorological and hydrological warnings and forecast river levels.

Recommendations:

- **R40:** Funding for the RHMSS should be secured to provide for additional measuring equipment, instruments and software (e.g. additional automated rain gauges to allow for prediction of flash floods), for maintenance of stations and in order to increase the number of experts.
- **R41:** Funding for the Seismological Survey institution should be secured for enough trained personnel and for technical equipment and software to continue localisation of epicentres, to maintain a detailed enough earthquake hazard map to allow for impact analysis, to cooperate with important national and regional stakeholders, and possibly to allow for functional short-term warnings. Better cooperation with the National Risk Registry should be established.
- **R42:** Establish functional 112 centres. Use the introduction of the 112 centres as a tool to further improve coordination and cooperation among police, fire and ambulance services, including development of a nationwide incident command system. Maintain analogue radios and repeaters besides digital radios to avoid redundancy. Provide sufficient funding for installation and maintenance of sirens at the local level.

4.3 Capability analysis and planning

There are challenges in terms of the capabilities of the SEM and the municipal level and in terms of response.

4.3.1 The Sector for Emergency Management

The SEM faces challenges in terms of funding and personnel (with the special issue of sustainability of projects) and in terms of its premises.

In terms of funding, the SEM has a dedicated budget line within the national budget. However, this budget line only covers investment costs, for example the purchase of vehicles. Operational costs (including personnel costs, building maintenance, etc.) must be covered by a common budget line that covers the whole MoI. This gives less planning reliability and flexibility to the SEM.

In terms of personnel, the SEM has highly dedicated and qualified staff, which is a huge asset. However, staff shortages require personnel to take on a variety of duties routinely managed by more personnel in other systems. For example, public awareness, media and situation reports for the Emergency Response Coordination Centre are all done by the same person, beyond their day-to-day functions, and there are 43 bylaws covering multiple legislative areas that need to be developed in order to put the Law on Disaster Risk Reduction and Emergency Management into practice – all managed by relatively few staff.

Sustainability of projects is an issue greatly influenced by funding and personnel. Projects should be sustainable in the sense of the actual project management as well as of continuation after the project period ends. The above-mentioned funding issues, especially regarding funding of operational costs, may pose a risk in that respect. In addition, there is a problem with the pre-financing of internationally funded projects. For example, given the volume of internationally funded projects, insufficient staff levels may affect the effectiveness and sustainability of such projects.

The premises occupied by the SEM as of May 2019 are suboptimal, not only in terms of office space, but also in terms of establishing a true and viable 112 centre. In order to provide suitable working conditions to fulfil its functions, such a centre needs enough space, personnel and equipment. However, a suitable location for a new headquarters of the SEM has been identified that could also accommodate the 112 centre.

4.3.2 Municipal level

The Law on Disaster Risk Reduction and Emergency Management defines the tasks for which the local self-governments are responsible. They include, but are not limited to:

- risk assessment, risk reduction plan, protection and rescue plan, possibly external accident plan(s);
- establishment of the headquarters for emergency situations and possibly a situation centre;
- establishment of civil protection units, designation of entities of special importance;
- planning and provision of budget funds for DRR and emergency management;
- cooperation with neighbouring self-government units;
- annual work plan and annual report.

Generally, at the municipal level, there is a lack of funding, personnel, expertise, training and equipment. At least regarding funding, in addition to the overall limited funding at the local level, this also seems to be an issue of competing priorities: mayors may have other, more visible tasks that are easier to 'sell' to their voters than the non-event of DRR. Thus, although local self-governments are required by law[15] to dedicate funding from their normal budget to DRR and emergency management, they only dedicate 0.01-1.7 % to it. Moreover, local self-governments face difficulties in applying for funding for capital projects. Regarding personnel, at least in Belgrade, there is relatively high turnover in the municipalities, which necessitates continuous training programmes. Expertise may be lacking, especially in new mayors. The SEM provides a three-day training course, including tabletop exercises, for new mayors. The deputy heads of the LEMH are the local commanders of the SEM, who can also provide expertise, however there is a need for further training and exercises.

This reality on the ground is met with the top-down obligations defined in the law. With limited personnel and training, the long list of tasks leads to a heavy workload and requires personnel to deal with many conflicting priorities, which in turn leads to a lack of capacity or willingness to meet legal obligations. As a result, the level of readiness, equipment and training at the local level varies, but is generally quite low.

As of May 2019, 130 out of 174 local self-government units have developed a risk assessment. The MoI, through authorisation and licensing stipulated in the Law on Disaster Risk Reduction and Emergency Management, controls who can develop risk assessments, protection and rescue plans and external accident plans and defines the necessary training. According to what the peer review team has learned during the session on risk assessment, only a few of the risk assessments have been conducted by the municipalities exclusively with their own personnel, the rest by consulting firms authorised to perform risk assessments. Even if consulting firms are used, municipal personnel should be involved at least to ensure information flow and ownership. However, much depends on whether there is sufficient funding to finance the consulting firms and municipal personnel necessary for the local risk assessments, protection and rescue plans and external accident plans, and therefore whether adequate capacity building can be provided.

To some extent, this situation is mitigated through the SCTM and the river basin cooperation projects, which set a good example for others to follow.

15 Article 29, No. 5 of the Law on Disaster Risk Reduction and Emergency Management.

4.3.3 Response capacities

Despite improvements, as of May 2019, response capacities still seem to lack the capacity to scale up.

Improvements made

In recent years, response capacities have increased. Since 2017, there have been several capital projects enabling the procurement of specialised rescue vehicles and domestic and international donations and the equipment of specialised teams for water-related emergencies. Programmes and projects for accession to the EU (Chapter 27) envisage the admission of new firefighters, an increase in the number of operational units and the procurement of equipment and training, with a particular focus on floods, urban search and rescue and chemical, biological, radiological and nuclear incidents. The Action Plan for the Implementation of the National DRM Programme 2016-2020 also foresees measures designed to build response capacities but, to a large extent, makes the precise nature of those measures (and corresponding funding needs) dependent on prior capacity analysis.

The action plan envisages a capacity analysis of the professional fire and rescue units (covering personnel, material and technical capacities). The capability analysis is listed as an activity contributing to Result 4.2.6 of the action plan, 'Capacities for timely response of fire-fighting and rescue units in emergency situations are improved'. The decisive question in that context would be what constitutes a 'timely' response. Eventually, this is a political question, very similar to the definition of accepted risk. To the knowledge of the peer review team, such an analysis has not yet been completed.

From the peer reviewers' point of view, as of May 2019, response capacities seem to be quite overstretched already for everyday responses, and without greater capacity to scale up will only be further challenged in the case of major disasters.

Everyday response capacities

Regarding everyday response capacities for the whole of Serbia, the peer review team has not been presented with data concerning the area and population covered by fire stations, ambulance stations and civil protection units, average response times and average calls per day. Data could only be obtained for individual locations and served as a basis for extrapolation. The overall picture is one of fire and rescue forces with limited capacity. Regarding fire and rescue capacities, there are currently 3 300 professional firefighters. The SEM aims to increase this to around 4 500 firefighters.

The Krusevac area may serve as an illustrative example of limited resources. The city of Krusevac has a population of around 60 000. The Krusevac fire station itself has a permanent staff of 44 firefighters, whereas the four fire stations covering the municipalities in the surrounding areas have a permanent staff of 42 firefighters in total. These firefighters are working shifts of 2-3 firefighter (per shift). In case a larger scale emergency occurs, all available forces will be activated (regardless of the number of staff working in a shift). With those two firefighters, their ability to save lives and suppress fires is extremely limited: victims trapped by smoke or fire unable to reach a window (especially unconscious victims) cannot, under normal circumstances, be rescued.

For such a rescue, self-contained breathing apparatus is necessary, which requires a minimum of four, ideally six, firefighters[16], who are only available once backup from one of the other fire stations arrives, approximately 20 minutes later – a long time for victims trapped by fire or smoke.

Similarly, EMS capacities seem to be severely overstretched as well. One reason for this is that Serbia's EMS system is constructed as an all-advanced life support system. In such systems, all ambulances are staffed with advanced life support staff – doctors, in Serbia – which is expensive and limits the number of ambulances available. (At the same time, an all-advanced life support system restricts the time doctors have for advanced procedures, as they mostly respond to minor cases in which such procedures are not strictly necessary.)

Disaster response capacities

With no major capacity to augment the response level, the already overstretched system is even further challenged during disasters.

In Serbia, in the case of disasters, the following fire and rescue and civil protection units and teams can be used:

- everyday professional fire and rescue and ambulance personnel;
- specialised teams staffed by professional fire and rescue personnel;
- volunteer fire-fighting units;
- specialised civil protection units staffed by voluntary personnel;
- general civil protection units staffed by voluntary personnel.

Specialised teams can comprise, for example, water rescue, high-capacity pumping and urban search and rescue (although not certified by the International Search and Rescue Advisory Group as of May 2019) capabilities. The specialised teams are staffed by professional firefighters with specialised training. This is a sensible approach as it ensures that specialised responders are experienced rescuers whose specialised training supplements their experience with everyday fire and rescue calls.

However, that approach further diminishes the already overstretched ordinary fire and rescue response capacity: when a disaster strikes, the firefighters with specialised training (around 15-20% of the firefighter workforce) leave their station and meet with specialised firefighters from other stations to form the specialised teams, leaving their home fire stations understaffed.

That lack of personnel may then be counterbalanced by, first, calling in designated standby personnel and, then, all off-duty personnel. Initially, all personnel may then work on a 24/7 basis. For longer-lasting disasters, this is clearly unsustainable. Instead, during the disaster, an adapted shift system is needed.

16 At least without running exceptional risks, which are only warranted under very special circumstances on a case-by-case basis, e.g. with a victim lying close to the entrance and backup firefighters arriving any minute. Under normal circumstances, and following normal safety procedures, two firefighters are needed to conduct the actual interior attack, two firefighters as a standby rescue team and, ideally, a separate pump operator and a separate incident commander.

Such an adapted shift system may be individually appointed by the head of the individual fire station. To ease the burden and improve reliability, one might switch to a shift pattern based on 24-hour shifts, as used throughout the world. Generally, it seems harder to adapt shifts from the present system of 12-24-12-48 (12 hours on, 24 hours off, 12 hours on, 48 hours off) and easier to adapt from a 24-72 pattern (24 hours on, 72 hours off). It would work very well as even Serbia's busiest fire department, at Novi Sad, has an average of about seven daily calls[17]. During the disaster, then, the 24-72 pattern could be easily adapted to a 24-24 pattern, which is not only more sustainable but also doubles the workforce.

Another solution to increase the augmentation capacity is to create regional reserves of ordinary fire and rescue personnel (not specialised forces) to be deployed to other parts of the country, similar to the specialised teams. Such a reserve would have predefined fire vehicles and personnel from different areas, being drawn together and travelling together to the disaster area. Fire vehicles and personnel would be predefined in a way that would not leave the home area vulnerable. The regional reserve teams could also be mixed together with voluntary fire departments. Such a system is used, admittedly with a higher overall firefighter workforce, in several of the states in Germany, such as North Rhine-Westphalia.

As of May 2019, an overstretched system that gets further overstretched when specialised personnel leave the station to join the specialised teams also means there are few ordinary fire and rescue personnel in reserve who could be sent to other areas of the country, even if their own response area is not affected by the disaster. This lack of elasticity in the system diminishes the ability to scale up response levels. Ideally, response capacity can be augmented along the following lines:

- everyday emergencies;
- large-scale emergencies to be covered with local resources;
- large-scale emergencies to be covered with regional resources;
- large-scale emergencies to be covered with national resources;
- large-scale emergencies additionally requiring international resources.

If there are limited resources to deploy elsewhere in the country outside the normal response area, and those resources are further diminished by sending personnel to join specialised teams, there is not much of an augmentation capacity, but rather a 'specialisation capacity'.

Voluntary forces cannot significantly counterbalance this lack of augmentation capacity. As of May 2019, voluntary fire departments are not, for historical reasons, available throughout the country. Equipment and training are limited. For example, the Erdevik voluntary fire department lacks self-contained breathing apparatus and corresponding training and therefore personnel cannot enter buildings to extinguish interior fires. This situation is now being tackled with the new law on voluntary fire departments, which defines the minimum requirements for voluntary fire departments.

Also, civil protection units seem unable to significantly scale up the response capacity. Generally, there is a lack of voluntary personnel (also due to limited reimbursement of employers and insurance problems). Currently, there are 173 specialised civil protection units with around 4 400 members, of which only 76 units with around 1 900 members have completed their training. Funding for training and equipment is limited.

17 Over a period of four days, for example, a 24-72 pattern has the same number of working hours as the 12-24-12-48 pattern.

Specialised civil protection units are limited to a support role, joining the existing specialised teams to increase their numbers. The reason for this is limited equipment and training and a lack of experience. After their basic training, there is continuous training of only one day per year. They are also not equipped and organised to act as independent units that could be easily shifted within the country and could act as a reserve. According to the Law on Disaster Risk Reduction and Emergency Management, there are civil protection units at local and national levels, but to what degree that contributes to a layered augmentation capacity remains unclear.

As mentioned earlier, medical response capacities seem to be further overstretched during disasters thanks to EMS being based on an all-advanced life support system. On top of that, according to the information received from the SEM, there are no specific preclinical mass casualty incident structures in place that would cover elements such as triage, treatment areas and advanced medical posts and transport staging. Regional emergency medical response reserves (much like for regional fire and rescue reserves) seem also not to exist. Such mass casualty incident structures would allow for more efficient use of the limited resources. **Box 11** outlines the good disaster response practices in place as of May 2019 and lists some recommendations for improvement.

Box 11: Disaster response capacities

Good practices:

- **G20:** The SEM has highly dedicated and qualified personnel, which is a huge asset.
- **G21:** As of May 2019, recruiting of new professional firefighters is increasing and is envisaged to bring the number of professional firefighters within Serbia from around 3 300 to 4 500.
- **G22:** The newly implemented legislation of voluntary fire associations defines minimum criteria for voluntary fire units and aims to increase the number of available voluntary fire units.
- **G23:** The national Red Cross society of Serbia seems to have excellent capacities with over 7 500 active volunteers used in the 2014 floods in areas like assessment, water pumping and technical aid, water rescue, evacuation, shelter, global water sanitation and hygiene, first aid, relief goods and tracing.
- **G24:** The SEM's experienced personnel at the national level can support local level personnel before and during disasters.

Recommendations:

- **R43:** Make sure the SEM has enough funding (including for operational costs) and personnel to match its responsibilities and to sustain internationally funded projects in particular.
- **R44:** Provide adequate funding, personnel and training to increase capacities at local level.
- **R45:** Conduct the capacity analysis of the professional fire and rescue units envisaged in the action plan (covering personnel, material and technical capacities) as soon as possible. Develop a response capacity that allows for gradual augmentation of response, from everyday emergencies to full-scale disasters. Adapt funding and capacity building accordingly.
- **R46:** Continue and increase hiring of additional professional firefighters.

  Consider integration of voluntary firefighters into the professional fire stations in order to increase capacities and to allow for build-up of routine and mutual learning.

  Consider changing to an easier 24-72 shift pattern for the firefighters and, during a disaster, a 24-24 pattern (for a limited time) to guarantee normal operational fire capacity when personnel of specialised teams are unavailable.

  Create regional reserves of ordinary fire and rescue capacity to be deployed to other parts of the country and consider blending reserve teams with voluntary fire departments.
- **R47:** To increase EMS capacity, introduce a two-tiered (basic and advanced life support) system to increase the number of available ambulances without increasing costs. The basic life support level should be staffed with qualified allied health professionals and the advanced life support level with qualified allied health professionals and physicians.

  Establish preclinical mass casualty incident structures that cover triage, treatment areas and advanced medical posts and transport staging. Establish regional reserves of emergency medical response resources (much like those suggested for fire and rescue) drawn together from different areas and pre-defined in such a way that home areas are not left uncovered.

  Establish systematic cooperation between fire and EMS regarding the development of matching standard operating procedures, training, etc.
- **R48:** Consider obtaining EU funding for International Search and Rescue Advisory Group certification of specialised teams or other capacity-building measures.

4.4 Training

There is a lack of training both at the responder level (especially regarding the voluntary specialised civil protection units) and at the level of municipal staff. This is due to the fact that the number of training facilities, trainers and funding for training is limited. See **Box 12** for an overview of good training practices and recommendations for the future.

4.4.1 Training at responder level

Regarding responders, training priority is given to firefighters, as of May 2019, and then to civil protection volunteers. The firefighters certainly need training, as they have so many roles to fulfil – classical fire and rescue response, specialised tasks like urban search and rescue, water rescue and high-capacity pumping – and as they essentially form the backbone of Serbia's disaster response. As for first aid, the Red Cross delivers training to firefighters.

In the Law on Disaster Risk Reduction and Emergency Management, the establishment of a National Training Centre is envisaged. However, no dedicated premises have yet been identified at the time of writing, such that Belgrade fire station is used for training purposes, although a suitable location for a National Training Centre has been identified 40 km from Belgrade.

In 2010, a training centre for teaching technical rescue from traffic accidents was opened in Ruma. It offers 10-day courses for 10-12 participants. So far, 21 training sessions have been delivered. This traffic accident training centre represents a very good training infrastructure, paired with realistic scenarios such as dealing with vehicles in ditches, vehicles on fire with victims trapped inside or during heavy rain. Although firefighters and emergency medical teams train on technical rescue together in Ruma, the training is not yet systematised but rather on a case-by-case basis.

Regarding the voluntary specialised civil protection units, there are currently 173 specialised civil protection units, with a total of around 4 400 members. Only 76 units (around 1 900 members) have completed their training. After basic training, they have only one day's continuous training per year.

4.4.2 Training at municipal level

There is a lack of training for personnel at the municipal level, due to a lack of funding and training facilities.

There is one regional centre in Krajevo dedicated to the training of municipal staff, but according to the PIMO, four centres are needed. However, a total of EUR 1 000 000 (EUR 500 000 for construction, EUR 500 000 for equipment) has been requested from the IPA to help bring the regional training centre up to the required level.

Because of elections, there is often a high turnover of mayors. Consequently, they lack experience in DRR. Since 2011, training sessions for elected officials are designed to provide at least a basic level of knowledge in DRM. For instance, the SEM complements municipal emergency management capacities through three-day training sessions for the headquarters' commanders (that is, mayors), heads and all members of the LEMH. SEM local unit commanders work closely with the mayors and brief them on how to act in times of emergency. The OSCE and Caritas have supported municipal training with, for example, tabletop exercises. With the assistance of both the OSCE and the RISE project, conducted together with the Swedish Civil Contingencies Agency, it is expected that 36 out of 176 municipalities will receive training each year.

Box 12: Training

Good practices:

- **G25:** The traffic accident training centre provides a very good training infrastructure paired with realistic scenarios.
- **G26:** National representatives of the SEM provide training for mayors and local SEM staff, which favourably complement the support mayors receive from the SEM before and during emergencies.

Recommendations:

- **R49:** Develop a training plan quantifying needs for initial and ongoing training with clear training outcomes, considering also newly recruited firefighters.
- **R50:** Establish systematic interdisciplinary training and exercises with professional fire and rescue, voluntary fire and rescue, civil protection and ambulance personnel.
- **R51:** Establish the National Training Centre.
- **R52:** Open additional training centres at the municipal level.

4.5 International collaboration

The Republic of Serbia cooperates with a broad range of international partners. In 2015, Serbia signed an agreement with the EU to participate in the UCPM. From the EU side, there are several programmes under the IPA aiming to bring Serbia closer to effectively cooperate with the mechanism, foster regional cooperation and support capacity building. This includes programmes under EU-IPA I, EU-IPA II (including IPA FLOODS) and IPA DRAM. Other donors and international players, such as the OSCE, UNDP, UNDRR, the Capacity for Disaster Reduction Initiative and the World Bank have contributed to the same aim. The same holds true for individual governments from, for example, Sweden and Japan. Serbia is also part of regional cooperation initiatives like the Disaster Preparedness and Prevention Initiative for South Eastern Europe. Serbia has signed agreements on cooperation in the field of emergency situations with: Ukraine (2004), Russian Federation (2009), Bosnia and Herzegovina (2010), Montenegro (2010), Azerbaijan (2011), Slovakia (2011), Hungary (2013), Croatia (2014), Slovenia (2015), Bulgaria (2019).

The Law on Disaster Risk Reduction and Emergency Management anticipates the receipt and provision of international assistance and envisages for this purpose direct communication with the competent authorities of other states and international organisations (the national 112 centre will be the contact point). In addition, the law highlights the coordination required for crossing of state borders and the coordination of the activities of international protection and rescue forces and of the actual acceptance and distribution of international assistance on Serbian territory. Further details are to be stipulated in a regulation on the procedure and conditions under which international assistance is received or sent, as a bylaw to the Law on Disaster Risk Reduction and Emergency Management.

In emergencies requiring international assistance, entry and operations of incoming assistance may pose numerous legal problems, such as visa and customs regulations or work permits (more details can be found in the International Disaster Response Law Guidelines adopted by the state parties to the Geneva Conventions and the International Red Cross Red Crescent Movement ('Guidelines for the Domestic Facilitation and Regulation of International Disaster Relief and Initial Recovery Assistance'). In addition, the Model Act on International Disaster Response Law may serve as a reference. The International Federation of Red Cross and Red Crescent Societies work closely with National Red Cross and Red Crescent Societies to support governments that wish to adopt those instruments into their national legal frameworks. For host nation support of incoming relief teams, the EU provides support via the Host Nation Support Guidelines.

As Serbia's response capacity is limited, the disaster level requiring international assistance could be reached relatively quickly and it is therefore essential that relevant international resources should be carefully integrated into the National Protection and Rescue Plan (see overview in **Box 13**).

Box 13: International collaboration

Good practices:

- **G27:** The Republic of Serbia cooperates with a broad range of international partners.

Recommendations:

- **R53:** Develop the bylaw covering receiving and sending of international assistance as a priority. Use the International Federation of Red Cross and Red Crescent Societies' International Disaster Response Law Guidelines and Model Act on International Disaster Response Law in the process, and involve the Serbian Red Cross.
- **R54:** Carefully integrate the use of international resources into the National Protection and Rescue Plan.

4.6 Public awareness

The SEM makes a major effort to convey DRR-related information to the general public, especially information on how to prepare for and react in the event of a disaster. The SEM follows a strategy of educating children in the hope that they will eventually spread the information and so educate and motivate their whole family (**Box 14**). The strategy has two main channels.

First, brochures package the information in an appealing way for children, including, for example, a colouring book, a story book and an all-encompassing family guide on disaster preparedness and response. The brochures are also published in minority languages.

Second, DRR-related content is spread through the schools, with cooperation among the SEM, the Ministry of Interior and the Ministry of Education. Since 2017/2018, children in the first, forth and sixth grade (2017-2019 around 140.000 children) in all schools in Serbia receive DRR-related tuition, especially regarding self-protection. For 2020, there is a plan to extend this to children in the second and sixth grades, and in 2020/2021 to the rest of the children. DRR is mainstreamed into subjects like geography and complemented with evacuation exercises and many smaller projects (on average 20 per school). In 2018, there were about 750 evacuation exercises and 7 500 education sessions, with a total of 177 000 children taught. The Ministry of Education emphasises the training of teachers in DRR (as of May 2019 around 500 teachers have been trained) and so uses a train-the-trainer approach, supported by Unicef and Caritas.

The SEM is also active on social media (Facebook, YouTube, including MoI Twitter and Instagram account) and posts prevention, preparedness and recovery-related content there, as well as information on actual incidents.

As of May 2019, a national media strategy is being prepared. Each month, the SEM receives between 100 and 200 media requests, depending on the number of incidents happening. The media requests are answered with corresponding press releases.

Box 14: Public awareness

Good practice:

- **G28:** The SEM makes a major effort to convey DRR-related information to the general public, especially information on how to prepare for and react in the event of a disaster, by following a strategy of educating children first and hoping they will educate and motivate their whole family.

4.6.1 Follow-up, monitoring, evaluation and reporting

The plans are monitored by the PIMO (see action plan p. 9-10).

4.6.2 Administrative, financial and technical aspects

As mentioned above, an analysis of the professional fire and rescue units has been recommended in the action plan and the findings will confirm the level of funding required. The analysis should be completed as soon as possible and the funding (and capacity building) adapted accordingly. Notwithstanding the information already presented in this chapter, the analysis is likely to reveal that there is a need to further improve the technical capabilities of firefighters through specialised vehicles and equipment. It is also likely to identify a need to improve the overall living and working conditions of professional firefighters, using the capital investment process. While some of these improvements can be achieved using funds available nationally, international and domestic donations will be required for ongoing improvement of the response capacity of rescue units throughout Serbia.

5. Conclusions and recommendations

Throughout this report, good practices and recommendations have been identified for specific elements of Serbia's DRM system. Below, the peers have provided what, in their view, are the most important good practices and recommendations in the spirit of mutual exchange and learning.

5.1 Good practices

- The PIMO is a highly competent, agile unit with strong connections to the central government, which acts as a strong voice to serve the needs in the field of DRM in the broadest sense. It has very highly qualified and dedicated staff.
- The SEM has institutional depth, represented at all levels of government and throughout the country. The dedication of the SEM's personnel, who are highly qualified and motivated, is an important asset for Serbia.
- The NEMH, which has three or four top-level meetings each year, is an excellent institution that serves as a good example for multi-stakeholder collaboration.
- The new legislative framework is comprehensive and strong.
- In terms of plans, what is foreseen by the law contains very important elements (although certain additional aspects still require work).
- The SEM is implementing the Risk Register in collaboration with the RGA, which will have to maintain it. This is an important instrument for DRM.
- All the relevant hazards for Serbia have been identified, which represents a good starting point for a multi-risk assessment.
- Working groups have been established for each hazard, which include relevant stakeholders so that information is shared well within the hazard-relevant community.

5.2 Recommendations

The peer review team has prepared four key recommendations that may be used by the Republic of Serbia to further improve its DRM system. Each of these four key recommendations consists of different elements. A provisional prioritisation is indicated for each of these elements, highlighting whether they can best be addressed in the short, medium or long term.

Table 8: 1. Strengthen the comprehensiveness and inclusiveness of the risk assessment process

Develop a more comprehensive and strategic approach to risk analysis: take into account multi-hazard analysis and new emerging risks due to the effects of climate change, as well as cascading effects (including critical infrastructure failure etc., as specified in subsection 3.1.1).	**Short-term**
Involve the scientific community: the participation of the scientific community is crucial to understand new emerging risks due to climate change and adaptive measures. It is recommended to strengthen the collaboration with scientific and research organisations by establishing formal agreements and including them permanently in the whole process of risk assessment.	
Complete the Risk Register and improve the collection of historical loss data: a crucial part of the risk assessment process is the collection of loss data in the Risk Register. This should include the type and description of risks and the standard procedures for collecting data for the risk reduction activities. In order to support the development of risk scenarios and for assessing residual risk, systematically record and share this disaster loss data.	**Medium-term**

Table 9: 2. Develop disaster preparedness and contingency plans and capacities

Develop the missing disaster preparedness and contingency plans: develop cross-sector coordinated disaster preparedness and contingency plans (including mass casualty incident plans), covering the aspects specified in subsection 4.1, and especially allowing for gradual augmentation of response from everyday emergencies to emergencies requiring international assistance	**Medium-term**
Adapt response capacities accordingly: increase response capacities as specified in subsection 4.3, for instance through additional firefighters, regional reserves, adapted shift systems, integration of voluntary firefighters, fostering civil protection volunteers and response capacity enhancement of, and cooperation with, the emergency health system.	
Enhance early warning capacities: secure sufficient funding for the Republic Hydrometeorological Service and the Seismological Survey of Serbia. Establish a functional 112 centre.	

Table 10: 3. Strengthen the SEM and local administrations' capacity and funding

Adapt the SEM's staffing level: provide the SEM with more personnel to better distribute responsibilities and duties, especially with regard to internationally funded projects.	**Medium-term**
Provide adequate funding: adapt the budget accordingly and make sure operational costs of the SEM are properly documented and assessed.	
Strengthen the local level: provide adequate funding, personnel and training. Provide the local level with (ideally, commonly elaborated) draft templates for risk assessments and for disaster preparedness and contingency plans, as well as with standard operating procedures and checklists. Promote collaboration between neighbouring municipalities through joint training, information exchange on risk assessments, disaster preparedness and contingency plans, etc.	**Long-term**

Table 11: 4. Further strengthen the overarching institutional framework

Safeguard the PIMO–SEM cooperation: establish safeguards to make sure the cooperation is sustainable and its vulnerability to changing politics is reduced (e.g. through a steering committee).	**Medium-term**
Continue the NDRMP 2016-2020: for a new period, including strategy and action plan.	
Operationalise the National DRR Platform: make sure the National DRR Platform and NEMH are supplemented with suitable and regularly recurring working-level meetings, working groups or staff meetings for the policy implementation and planning side (between disasters, including prevention efforts) and for the coordination side (during disasters).	**Short-term**
Enhance multi-hazard, multidisciplinary and vertical and horizontal cooperation: conduct more detailed multi-hazard risk assessments. Ensure broad stakeholder involvement in all important processes, with a multidisciplinary and multilevel approach from a bottom-up perspective. Make sure there are designated points of contact in relevant organisations involved in DRR and emergency management with a good grasp of both planning and operational perspectives, and of single- as well as multi-hazard scenarios.	

Annex – Meetings and stakeholders consulted

Below is an overview of all the stakeholders the peer review team had the pleasure to meet during the on-site mission in the Republic of Serbia in May 2019.

Programme of 6 May 2019

SEM MoI

- **Department for Preventive Protection**
  - **Dragana Radosavljevic**, Assistant Head of Department
  - **Tatjana Petrusic**, Deputy Head of Division for Inspection Supervision
  - **Neda Nedovic**, Head of Section for Explosive Substances, Weapons and Ammunition
  - **Department for Risk Management**
  - **Vlastimir Vulikic**, Assistant Head of Department
  - **Marija Todic**, Head of Division for Coordination and Emergency Management
- **Department for Fire and Rescue Units and Civil Protection**
  - **Dragan Doncevski**, Head of Division for Coordination of Fire and Rescue Units and Forces of Protection and Rescue System
  - **Milan Kocic**, Head of Section for Operational Support and Preparation of Fire-fighting and Rescue Units and Forces of Protection and Rescue System
  - **Nenad Paunovic**, Deputy Head of Division for Civil Protection Units
  - **Damir Jagic**, Group leader in Section for Civil Protection Units
- **International Cooperation**
  - **Ivan Baras**, Assistant Head of the SEM and Head of International Cooperation
  - **Dejan Radinovic**, PhD, Head of Section for European Affairs
  - **Nina Nikolic**, Head of Section for Projects and Donations.

Programme of 7 May 2019

SEM MoI

- **Ivan Baras**, Assistant Head of the SEM and Head of International Cooperation
- **Bojan Kostic**, Assistant Head of the SEM
- **Natasa Neskovic**, Head of Division for Economic and Material and Technical Support
- **Jelena Dimic**, Deputy Head of Department for Legal Affairs and International Cooperation
- **Dejan Radinovic**, PhD, Head of Section for European Affairs
- **Nina Nikolic**, Head of Section for Projects and Donations

UNDP

- **Zarko Petrovic**, programme analyst for resilient development

OSCE Mission to Serbia

- **Miroslav Kragic**, national project officer

Caritas Serbia

- **Jovana Loncarevic**, programme officer

Unicef

- **Francesca Rivelli**, gender/GBV specialist
- **Severine Leonardi**, Deputy Director of Unicef in Serbia

EU Delegation to Serbia

- **Antoine Avignon**, programme manager – environment
- **Maja Vuckovic Krcmar**, programme manager

SEM MoI

- **Boban Stevanovic**, Deputy Head of the SEM

PIMO

- **Sandra Nedeljkovic**, Deputy director of the PIMO

World Bank

- **Darko Milutin**, DRM expert

DG ECHO

- **Johannes Luchner**, Head of Directorate A Emergency Management and RescEU and Directorate B Disaster Preparedness and Prevention (acting)

Programme of 8 May 2019

RHMSS

- **Aleksandar Nisavic**, acting Assistant Head and Head of Sector for Meteorological and Hydrological Forecast, Early Warning and Alert
- **Goran Mihajlovic**, acting Assistant Head and Head of Sector for Meteorological Observation System
- **Slavimir Stevanovic**, acting Assistant Head and Head of Sector for Hydrological Observation System

SEM MoI

- **Ivan Baras**, Assistant Head of the SEM and Head of International Cooperation
- **Bojan Kostic**, Assistant Head of the SEM
- **Natasa Neskovic**, Head of Division for Economic and Material and Technical Support
- **Jelena Dimic**, Deputy Head of Department for Legal Affairs and International Cooperation
- **Dejan Radinovic**, PhD, Head of Section for European Affairs
- **Nina Nikolic**, Head of Section for Projects and Donations
- **Angelina Redzic**, Head of Operations Section
- **Marija Vidanovic**, media coordinator

City of Belgrade Mayor's Office

- **Andrija Mladenovic**, Assistant Mayor
- **Rade Milosevic**, Head of Belgrade Emergency Management Department
- **Mile Jovicic**, Assistant Head of Belgrade Emergency Management Department
- **Radmila Jovicic**, Head of Belgrade 112 Centre

Belgrade Emergency Management Department

- **Mile Jovicic**, Assistant Head of Belgrade Emergency Management Department
- **Milos Majstorovic**, Head of Belgrade Fire Brigade

Programme of 9 May 2019

Ministry of Environmental Protection

- **Biljana Filipovic Djusic**, Assistant Minister
- **Sandra Milicevic Sperlic**, Head of Department for European Integration
- **Suzana Milutinovic**, Head of Section for Major Chemical Accidents Protection
- **Bojan Srdic**, expert
- **Dragana Radulovic**, expert
- **Darinka Borcevic**, expert
- **Milica Perovanovic**, expert

Ministry of Agriculture, Forestry and Water Management – Forest Directorate

- **Dusan Jovic**, expert

Republic Water Management Directorate

- **Merita Borota**, Head of Group for Watercourse Regulation and Protection against Harmful Effects of Water

Srbijavode

- **Milos Radovanovic**, Executive Director for Water Treatment, Use and Protection
- **Darko Janjic**, Head of the Technical Sector

Seismological Survey of Serbia

- **Branko Dragicevic**, Acting General Manager–Deputy General Manager
- **Goran Krunic**, seismologist adviser

Republic Geodetic Authority

- **Jelena Matic Varenica**, Assistant Director of Sector for Geodetic Affairs
- **Darko Vucetic**, Head of Centre for Geospatial Data Management
- **Danka Garic**, Assistant Director of Sector for Information and Communications Technology

Programme of 10 May 2019

SEM MoI EM Department in the city of Krusevac

- **Aleksandar Lazarevic**, Head of Emergency Management Department
- **Dejan Vasiljkovic**, Deputy Commander of Fire-Fighting Unit
- **Zoran Siketic**, Deputy Head of Department of Police Administration

City of Krusevac Mayor's Office

- **Vesna Lazarevic**, Deputy Mayor
- **Dusan Todorovic**, Head of Emergency Management Division of Krusevac city administration

Programme of 11 May 2019

SEM MoI Training Centre in the municipality of Ruma

- **Stevan Pejic**, Head of Emergency Management Department in Sremska Mitrovica
- **Zivoslav Ivkovic**, Commander of Fire-Fighting Unit of Emergency Management Department in Semska Mitrovica
- **Stevan Kovacevic**, Head of Municipal Council, Municipality of Ruma
- **Dusan Ljubisic**, Head of Municipality Administration, Municipality of Ruma

Volunteer fire-fighting unit in the village of Erdevik

- **Dragan Ilic**, Head of Volunteer Fire-Fighting Unit
- **Ivica Jovic**, Assistant Mayor of Municipality of Sid
- **Miroslav Kukucka**, Commander of Fire-Fighting Unit in Sid
- **Zivoslav Ivkovic**, Commander of Fire-Fighting Unit of Emergency Management Department in Semska Mitrovica

SEM MoI EM Department in the city of Novi Sad

- **Dragan Cveticanin**, Head of Emergency Management Department in Novi Sad
- **Stojan Milovac**, Commander of Novi Sad Fire Brigade

Programme of 13 May 2019

Standing Conference of Cities and Municipalities

- **Djordje Stanicic**, Secretary General
- **Ivan Milivojevic**, Deputy Secretary General
- **Aleksandra Vukmirovic**, Head of Department for European Integration and International Cooperation
- **Darko Drndic**, Manager of SCCM Advisory Centre

Red Cross of Serbia

- **Ljubomir Miladinovic**, Secretary General
- **Djula Losonc**, Disaster Management Coordinator for Emergency Preparedness and Response
- **Ranko Demirovic**, Coordinator of Emergency Response

Municipality of Obrenovac

- **Miroslav Cuckovic**, Mayor
- **Mile Jovicic**, Deputy Head of Belgrade Emergency Management Department
- **Vera Djordjevic**, Principal of Jovan Jovanovic Zmaj Elementary School

Programme of 14 May 2019

Statistical Office of the Republic of Serbia

- **Dragana Djokovic Papic**, Head of Section for Social Indicators, Judicial and Gender Statistics
- **Milivoje Grbovic**, expert

Faculty of Security Studies

- **Prof. Dr Vladimir N. Cvetkovi**c, Dean of the Faculty of Security Studies
- **Prof. Dr Vladimir Jakovljevic**
- **Prof. Dr Petar Stanojevic**
- **Prof. Dr Zelimir Kesetovic**
- **Prof. Dr Bozidar Banovic**
- **Prof. Dr Zoran Jeftic**

Ministry of Education, Science and Technological Development

- **Prof. Dr Gabrijela Grujic**, Assistant Minister
- **Dr Slavica Jasic**, Head of Department for Pre-primary and Primary Education
- **Ljiljana Simovic**, Head of the Section for Basic Elementary Education
- **Vladimir Dimoski**, adviser for the area of secondary education and upbringing
- **Katarina Randjic**, Independent Adviser in the Sector for International Cooperation and European Integration
- **Janko Canovic**, Head of Investments Section

Follow-up mission in November 2019:

Programme of 12 November 2019 DG ECHO

- **Gaetano Vivo**, EU Delegation to Serbia,
- **Spyros Afentoulidis**, ECHO officer

Fraunhofer INT

- **Gerald Walther**, Project manager

Peers

- **Antonella Morgillo**, civil servant at the Italian Civil Protection Department, Italy
- **Jens Kampelmann**, Consultant/Disaster Response Team member, Germany
- **Ljuban Tmusic,** Head of Department for Civil Protection and Humanitarian Aid, Directorate for Emergency Management, Ministry of Interior of Montenegro, Montenegro

SEM MoI

- **Ivan Baras**, Assistant Head of the SEM and Head of International Cooperation
- **Jelena Dimic**, deputy head of Department for Legal Affairs and International Cooperation
- **Dr Dejan Radinovic**, head of Section for European Affairs

RHMSS

- **Goran Mihajlovic**, acting Assistant Head and Head of Sector for Meteorological Observation System

PIMO

- **Sandra Nedeljkovic**, deputy director

RGA

- **Jelena Matic Varenica,** Assistant Director of Sector for Geodetic Affairs
- **Vasilija Zivanovic**, head of Group for Standardization and Legal Framework of NIGD, Geospatial Data Management Centre

Programme of 13 November 2019

DG ECHO

- **Gaetano Vivo**, EU Delegation to Serbia,
- **Spyros Afentoulidis**, ECHO officer

Fraunhofer INT

- **Gerald Walther**, project management

Peers

- **Antonella Morgillo**, civil servant at the Italian Civil Protection Department, Italy
- **Jens Kampelmann**, Consultant/Disaster Response Team member, Germany
- **Ljuban Tmusic**, Head of Department for Civil Protection and Humanitarian Aid, Directorate for Emergency Management, Ministry of Interior of Montenegro, Montenegro
- **Bojan Kostic**, assistant head of the SEM
- **Radmila Dabic**, project programming and preparation,
- **Jelena Jasovic**, deputy head of Department for Risk Management
- **Ivan Baras**, Assistant Head of the SEM and Head of International Cooperation
- **Dr Dejan Radinovic**, Head of Section for European Affairs

Funded by
European Union
Civil Protection