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Findings and Recommendations

Montenegro

Glossary..... 2

1. Legal and Institutional Framework for Flood Risk Management..... 2

2. Units of Management 4

3. International River Basin Authorities..... 4

4. Preliminary Flood Risk Assessment..... 6

5. Flood Hazard and Flood Risk Mapping..... 7

6. Flood Risk Management Plans 8

7. Data Sharing and Data Information Systems 10

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Glossary

APSFR	Areas with Potential Significant Flood Risk
EUFD	European Union Floods Directive [Directive 2007/60/EC of the European Parliament and of the Council on the assessment and management of flood risks]
EUMETNET	A group of 31 European National Meteorological Services that provides a framework to organise co-operative programmes between its Members in the various fields of basic meteorological activities.
EUWFD	European Union Water Framework Directive [Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy]
FH&FRM	Flood Hazard and Flood Risk Maps
FRMP	Flood Risk Management Plans
ICPDR	International Commission for Protection of the Danube River
IHMS	Institute of Hydrometeorology and Seismology of Montenegro
INSPIRE	Infrastructure for Spatial Information in Europe
ISRBC	International Sava Basin Commission
PEG FP	Permanent Expert Group for Flood Prevention
PEG RBM	Permanent Expert Group for River Basin Management
PFRA	Preliminary Flood Risk Assessment
RBD	River Basin District
SoPs	Standard Operating Procedures
UNEP/MAP	United Nations Environment Programme/ Mediterranean Action Plan
UNFCCC	United Nations Framework Convention on Climate Change
WISE	Water Information System for Europe

1. Legal and Institutional Framework for Flood Risk Management

Montenegro, after achieving its independence in June 2006, continues its EU integration process in different sectors, among others: adaptation in institutions responsibly in the fields of water management and civil protection. The realization of policy reform requires a comprehensive institutional support and comprehensive adaptation of legislation.

Water management is organized mainly according to the Montenegro Law on Water (OG MNE No. 27/07, 32/11 and 48/15), which is containing separate chapters concerning "Protection from adverse

effects of waters” and Financing of Water Management Law (Official Gazette of Montenegro, no. 68/08). In fact, Law on Waters was passed in May 2007 and the EU Floods Directive came into force in November same year, so that the provisions of this Directive could not be incorporated in the Law on Water. The Law on Amendments to the Law on Water (Official Gazette of the RCG No., 48/15), which is in force since 29/08/2015, has determined that the Preliminary Flood Risk Assessment, Flood Hazard Maps and Flood Risk Maps, and Flood Risk Management Plans for each river basin district shall be developed by Water Directorate of Montenegro (especial new Articles 95a till 95f). The Act establishes that the Ministry of Agriculture and Rural Development prepares the relevant bylaws for preparing, updating, implementing maps and plans and that both have to be published on the website of the Ministry of Agriculture and Rural Development. The Ministry of Agriculture and Rural Development has prepared the General Plan for Protection against Harmful Effect of Waters (OG MNE 67/10, 33/14) and the Operational Plan for the Protection against Harmful Effect of Waters.

Water Directorate of Montenegro is the competent authority for: enforcing the law; preparing plans and programmes to be adopted by the Government and by the Ministry of Agriculture and Rural Development; elaboration of water management plans; establishment and maintenance of the Water Information System (WIS). Despite the important role of the Water Directorate of Montenegro, its institutional capacity for the implementation of the provisions of the Law needs to be further developed.

Flood management during emergencies is under the responsibility of Ministry of Interior – Directorate for Emergency Management, the local self-government units and the Municipalities (local government). The Directorate for Emergency Management is the coordinating body in case of floods and it implements operational measures for the protection and rescue of population and goods during emergency. Several policy acts, legislation and procedures regulate the functioning of the emergency management system in Montenegro: National Strategy for Emergency Situations (2006), Law on Protection and Rescue (2007), the Rulebook on methodology for the development of threat assessment studies of natural, technical-technological and other disasters (2008); the Rulebook on methodology for the development of protection and rescue plans (2008), National plan for protection and rescue from floods (2011, updated 2014). Local self-government units are responsible for protection against the harmful effect of waters of local character.

The Institute of Hydrometeorology and Seismology of Montenegro is the national authority that provides weather and hydrological forecast and maintains/upgrades the existing monitoring network.

According to what mentioned above:

- Since the “By-law Rulebook on contents of preliminary flood risk assessment methodology of development of flood hazard maps and flood risk maps and content of flood risk management plans (OG MNE No. 69/15)” has been recently adopted, the IPA Floods draft recommendation to foster the approval of the by-laws related to Flood Risk Assessment and Management has been erased;
- It is recommended to strengthen the institutional capacity of public authorities to implement the requirements of the EUFD by employing an adequate number of additional competent personnel and to provide to the Water Directorate adequate technological and software tools for hazard and risk mapping and for data management; it is further recommended to strengthen the administrative capacities of the Water Directorate;
- It is also recommended to establish a reliable system of proper funding for the implementation of the EUFD in all steps Preliminary Risk Assessment, Flood Hazard and Flood Risk Mapping, Flood Risk Management Plans.

2. Units of Management

Two river basin districts, as the basic water management units, are designated on the territory of Montenegro:

- 1) River basin district of the Danube basin is a part of the international river basin district of the Danube;
- 2) River basin district of the Adriatic Sea basins.

The water management unit should provide integrated water management, respecting the hydrographical characteristics, the integral character and interconnectedness of a water regime.

According to what mentioned above:

- It is recommended to establish two competent authority or two sectors in Water Directorate of Montenegro for each river basin district on the territory of Montenegro and to improve technical capacity for flood risk management planning.

3. International River Basin Authorities

Montenegro is a member of the International Commission for Protection of the Danube River (ICPDR) and it has an observer status in the International Sava Basin Commission (ISRBC); Montenegro signed: the Convention on the law of the non-navigational uses of international watercourses; the Convention

on the protection and use of transboundary watercourses and international lakes; the Barcelona Convention and its five protocols. Montenegro is a full member of the Mediterranean Action Plan (UNEP/MAP).

Montenegro is taking part of the Drina Core Group, an international cooperation platform which has been established for the Drina international river basin by the Memorandum of Understanding for the management of Drina Basin. The Memorandum of Understanding was signed by Albania, Greece, the former Yugoslav Republic of Macedonia, Kosovo¹ and Montenegro.

Montenegro's relations on water management with the neighbouring countries, Croatia and Albania, are governed by the agreements signed between the States:

- Agreement between the Government of the Republic of Montenegro and the Government of the Republic of Croatia on mutual relations in the field of water management, developed and signed on 4 September 2007, in Zagreb;
- Agreement between the Government of the Republic of Montenegro and the Government of the Republic of Albania on water issues, concluded on 31 October 2001, in Podgorica.

At project level, Representatives of Montenegro, Bosnia and Herzegovina and Serbia on 29/06/2015 began the preparation of a project for the implementation of Water Framework Directive and Management of flood risk in the river Drina.

According to what mentioned above:

- *It is recommended that Montenegro fosters its further engagement into ISRBC and ICPDR and takes full advantage of sharing good practices with participating countries in order to transfer knowledge and resources to local young experts: great benefits can be enjoyed promoting the full implementation of the Protocol on Flood Protection - entered into force on November 27th, 2015 - of the ISRBC, and supporting the Permanent Expert Groups of the ISRBC on River Basin Management (PEG RBM) and on Flood Prevention (PEG FP); both groups can serve as adequate platforms for information exchange and they can also facilitate the access to common projects on flood management, such as the flood modelling and risk mapping of the Sava River (ongoing).*

¹ This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

4. Preliminary Flood Risk Assessment

Preliminary Flood Risk Assessment (PFRA) has not been yet conducted; however, Ministry of Agriculture and Rural Development is preparing adequate bylaw that will define the methodology for PFRA.

Data and information needed for PFRA are present in the country; data on historical floods, flooded areas and flood defence infrastructures for each river basin and sub-basin have been collected and registered form 2001. Municipal plans for protection and rescue from floods (17 Municipalities: Podgorica (local communities of Tuzi and Golubovci), Nikšić, Cetinje, Danilovgrad, Berane, Mojkovac, Kolašin, Bijelo Polje, Andrijevica, Plav, Bar, Ulcinj, Kotor, Budva, Herceg Novi, Rožaje and Pljevlja) contain Flood maps created on the basis of data relating to maximum water levels. These plans represent the first step for the preparation of flood hazard maps.

Data on flood losses are collected by the Commission for Assessment of Damage at national level and Commissions at local level. Important sources of loss data related to historical floods at national and local level are reported into the National plan (2011, updated 2014) and 17 municipal plans for protection and rescue from floods (2013 and 2014).

Flood hazard mapping for various probabilities (100 and 1000 years) have been prepared for the pilot section of Lim River; the maps are based on morphology of the riverbed of river Lim.

A systematic collection of flood records does not exists at national level, however the Law on Water (Article 159) envisages the establishment of the Water Information System (WIS) for the purposes of: water classification, monitoring and improvement of water regime, improving water infrastructures and water management, creating a cadastre of endangered areas and water facilities.

The Water Directorate, under the IPA project "Geographic Information System for better cross-border flood management in the catchment area of Lima", improved its own capacity for establishing a Geographic Information System for the water sector in Montenegro which eventually will lead to the creation of the National Water Information System.

The Institute of Hydrometeorology and Seismology of Montenegro registered data about water levels and its extremes for the major rivers as well as for the Lake Skadar.

According to what mentioned above:

- *it is recommended to supplement by more recent data the existing information about historical floods, flooded areas and flood defence infrastructures in accordance with the provisions of the EUFD;*

- *it is recommended to define existing experiences and common methodologies and techniques (historical data collection, access to disaster loss database, criteria to define relevant floods of the past, etc.) in order to achieve a shared approach towards a national-scale PFRA mapping. The “Guidelines for the implementation of EU Floods Directive and MSs Good practices” developed by IPA Floods Programme could be used as reference;*
- *it is recommended to implement a training program on the development and application of the methodology, fully dedicated to the institutions that have the mandate for conducting PFRA;*
- *the Water Directorate of Montenegro should improve the cooperation with the Commission for Assessment of Damage at national and local level in order to collect all useful data about losses of past floods that could be positively used in the process of PFRA and definition of APSFR: a close cooperation between Water Directorate and Directorate for Emergency Management as well as the adequate active participation of local self-government units is already established and running;*
- *Water Directorate of Montenegro should be supported by line-Ministries in the very demanding process of collecting data on potential damage and to work both at national and local level acquiring data from local level;*
- *it is strongly recommended to strengthen the capacity of experts of Water Directorate of Montenegro on spatial data management for PRA. The IPA project "Geographic Information System for better cross-border flood management in the catchment area of Lim" can serve as a reference.*

5. Flood Hazard and Flood Risk Mapping

For each River Basin District, flood hazard maps have been partially produced. As reported above, municipal plans contain Flood Hazard Maps created on the basis of maximum water levels.

Flood Hazard mapping is not systematically elaborated. Flood maps for some river section have been elaborated on project base by 1D simulations (River Analysis System HEC-Ras).

Risk assessment is an integral part of above mentioned municipal plans for protection and rescue from floods; it contains identification and digital mapping (GIS) of all objects and infrastructure at risk. The GIS databases contain the following category of data: Households (households in vulnerable areas, with data on number of children, adults, persons with disability, number of floors of the house, number of additional facilities, etc.); Economic and non economic facilities (property, purpose, number of floors, etc); Educational facilities (kindergartens, schools and other educational institutions) in vulnerable area and in its surrounding (number of children, pupils, students); Municipal facilities

(municipal facilities that can serve for response in case of emergency situation/floods); Traffic facilities (bridges and culverts in vulnerable areas, petrol stations, gas stations, harbours, dockyards, etc.); Road infrastructures (flooded roads and alternative roads); Health facilities (hospitals, health centres, ambulances) etc.

According to what mentioned above:

- A by-law that defines the methodology for Flood Hazard and Flood Risk mapping is under preparation; during the implementation of the methodology, the “Guidelines for the implementation of EU Floods Directive and MSs Good practices” developed by IPA Floods Programme could be used as reference. Already existing flood risk mapping and assessments should be taken into account, specifically the ones conducted by the Directorate for the Emergency Management reported into the National Plan for Protection and Rescue from Floods (2011, updated 2014) and into Municipal Plans for Protection and Rescue from Floods;
- it is recommended to implement a training/capacity building program dedicated to national institutions and stakeholders that will have the mandate for conducting Flood Hazard and Flood Risk Mapping on the assessment of floods in the whole country.

6. Flood Risk Management Plans

The Law on Waters (OG MNE No., 27/07; No., 32/11; No. and 48/15) envisages the preparation of Flood Risks management Plans for areas which are at significant risks of flooding. The plans have to be prepared by the Water Directorate in accordance with the River Basin Management Plans, the General Plan for Protection against Harmful Effect of Waters (OG MNE 67/10, 33/14) and the Operational Plan for Protection against Harmful Effect of Waters. The plans will be prepared by adopting the following criteria: in accordance with the River Basin Management Plan; with active public consultation and participation; in case of trans-national river basins, in coordination with neighbourhood Countries; while respecting the principle of solidarity, measures established in one country will not increase flood risks in other countries upstream or downstream in the same river basin or sub-basin; taking into account the impact of climate change on the occurrence floods.

National plan for protection and rescue and municipal plans for protection and rescue from floods for 17 municipalities (Podgorica (local communities of Tuzi and Golubovci), Nikšić, Cetinje, Danilovgrad,

Berane, Mojkovac, Kolašin, Bijelo Polje, Andrijevica, Plav, Bar, Ulcinj, Kotor, Budva, Herceg Novi, Rožaje and Pljevlja) represent the first step for the preparation of flood risk management plans.

According to what mentioned above:

- *it is recommended to develop FRMPs and ensure harmonization within the River Basin Management Plans as required by the EUWFD and the EUFD, with particular attention to transboundary issues connected with operational FRMP; to establish a mechanism for the effective implementation of the FRMP, including the establishment of National Early Warning System, identification of structural and non-structural measures for flood risk reduction and mitigation with particular attention to the measures that have trans-national dimension. The FRMP should also contain the provision on emergency management as set by National and local Emergency Plans;*
- *it is recommended to maintain the already existing close cooperation among water management institution and civil protection institutions in order to ensure operational value of FRMP, which has to be focused on prevention, protection, preparedness, response and recovery. The FRMP should also contain the provision on emergency management as set by National and local level (National plan for protection and rescue and municipal plans for protection and rescue from floods);*
- *it is recommended to strengthen the existing hydro-met services and upgrading their forecast and early warning capabilities on national level. Improve the observation and data transmission networks and better integration of meteorological and hydrological models and development of operational hydrological forecasting and warning system at basin level. Existing network needs to be optimized, upgraded and modernized, in particular by extending the number of automatic, real-time data transmission stations.*

7. Data Sharing and Data Information Systems

One of the principal non-structural flood mitigation measure is to ensure user-friendly and reliable public accessibility of existing and new hazard and risk information and maps and FRMP. Data information systems are also the base for the systematic elaboration of PRA and Flood Hazard and Risk Mapping. The Law on Water (Article 159) introduces the Montenegro Water Information System (WIS) for improving the accessibility to information and data in the field of water.

Data sharing is particularly important for Montenegro, since it is member of the European Union Civil Protection Mechanism and, as such, it has to provide country risk assessment regarding natural hazards to the EU Commission.

According to what mentioned above:

- *it is recommended to adopt a data sharing protocol (SoPs) among different institutions and organizations in order to facilitate the operational exchange of data and information; among others, the following institutions should be considered: Institute of Hydrometeorology and Seismology of Montenegro (IHMS), Ministry of Agriculture and Rural Development – Directorate for Water Management, Water Directorate of Montenegro, Ministry of Interior – Directorate for Emergency Management and Institute of Geology;*
- *it is recommended to fully implement the Water Information System and adopt standards for geospatial data in line with WISE system (Water Information System of Europe) and EU INSPIRE Directive;*
- *it is recommended to develop an integrated data information system for collecting, recording and sharing flood risk information and map for Preliminary Risk Assessment and Hazard and Risk Mapping. The system should allow the recording of historical floods in line with the guidance document of the EUFD. WIS and the Flood Risk Information System, developed under IPA Floods, should be used as an asset for addressing this recommendation;*
- *It is recommended to collect and unify all contemporary data from several projects with various international and national institutions into a single unit.*