



REPORT ON IDENTIFICATION AND ASSESSMENT OF EXISTING LEGISLATION, STRATEGIES AND PLANS RELATED TO FRM PLANNING AND CLIMATE CHANGE ADAPTATION (TRANSBOUNDARY AND NATIONAL)

Pilot Project on Climate Change Adaptation Building the Link between Flood Risk Management Planning and Climate Change Assessment in the Sava River Basin

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DISCLAIMER

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1. Introduction

This Report deals with identification and assessment of existing legislation, strategies and plans related to both transboundary and national flood risk management and climate change adaptation. A thorough analysis has been performed and an inventory has been created for the most relevant legislative documents, strategies and plans at EU, ISRBC as well as at the national level of the Sava River Basin riparian countries. Although structure of national documents is somehow different (except for the general Water Act), it could be concluded that the riparian countries are following the EU directives and legislative documents delivered by the ISRBC. The key difference is a timeframe of delivering the legislative documents related to the EU directives, and consequently, deliverables linked to the flood risk management (e.g., flood risk mapping).

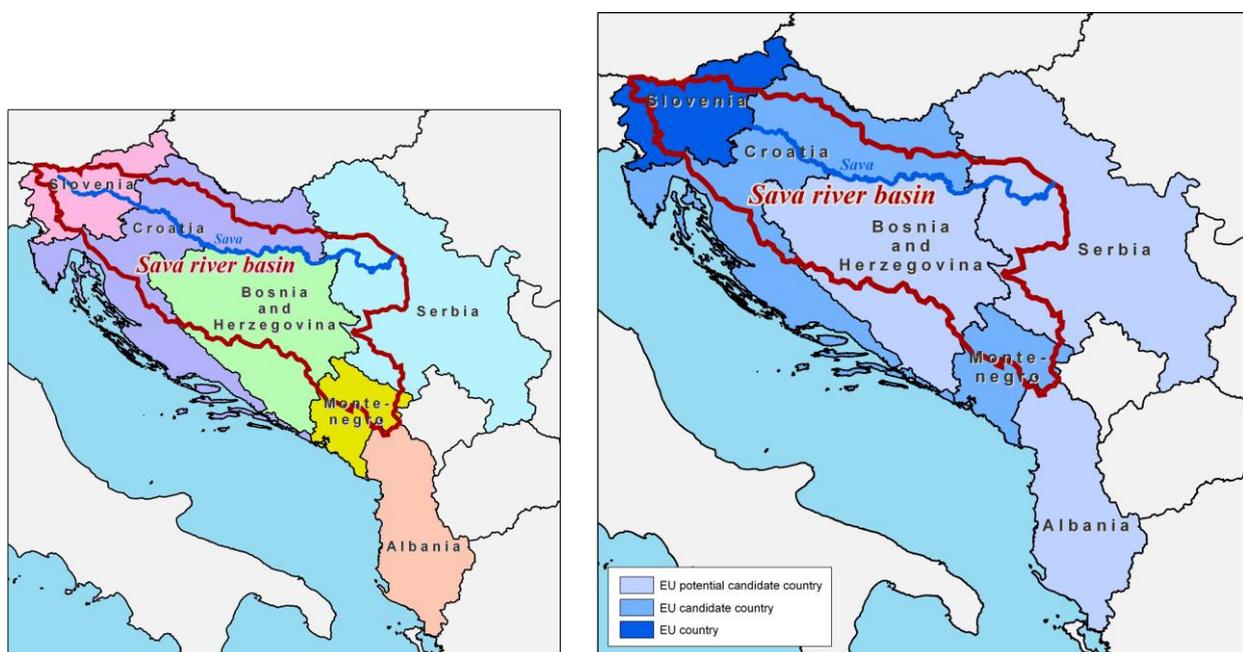


Figure 1: Sava River Basin and EU related status of Sava River Basin riparian countries

2. Identification and assessment of existing legislation, strategies and plans related to the FRM planning and climate change adaptation

The review of existing documents has been performed in collaboration with three national experts from Sava River Basin riparian countries (Slovenia, Bosnia&Herzegovina and Serbia). The existing legislation in all Sava riparian countries follows the EU Directive 2000/60/EC (EU WFD) and the EU Directive 2007/60/EC (EFD). However, there is still some discrepancy in preparedness level of existing legal acts between the countries. The origin of this difference comes from the fact that Slovenia is an EU Member State, Croatia is a candidate country with known date of accession (July 1, 2013), while Serbia and BiH as potential candidates still do not have the legal obligations to fully comply with the EU directives. However, by signing the Protocol on Flood Protection to the Framework Agreement on the Sava River Basin (FASRB), all countries obliged themselves to be in line with EU directives in regard to the food risk

management issues in the Sava River Basin, and further to develop a Flood Risk Management Plan (FRMP) for the Sava River Basin. This review showed that Serbia and BiH are going to prepare their legislation and deliver flood risk management maps not far behind 2015.

Climate change and its influence to floods have been recognised in all riparian countries but there is still lack of national legislative covering and regulating this issue. Sava River basin riparian countries ratified United Nations Framework Convention on Climate Change. Croatia formally established National Commission on Climate Change. In Serbia there are few scientific projects dealing with impact of climate change on water resources management and floods.

For the *Program for Development of the Flood Risk Management Plan in the Sava River* the discrepancies in legislation among riparian countries will be investigated. Another issue is how the countries will evaluate hazard (particularly floods with high and low probability) and risk, water level, and water velocity. Slovenia has already set the methodology, Croatia and Serbia are in the process of preliminary flood risk assessment such that the formalisation of the methodology in a form of a rulebook or similar legal act is expected soon. Where possible, it will be striven towards a harmonization of methodologies in the Sava River Basin.

Tables 1 and 2 below show an overview of most important legal documents, strategies and plans in Sava River Basin riparian countries. It could be seen that the flood risk management is incorporated into activities of these countries although they are not defined at the same level or within same strategic documents.

Table 1: Relevant legislation, plans and strategies in Sava River Basin riparian countries

DOCUMENTS		COUNTRIES				
GROUPS	TYPES	BiH		HR	SI	RS
		FBiH	BiH - RS			
LEGISLATIVE	Climate change	N/A	N/A	N/A	N/A	N/A
	Water Act	Exists	Exists	Exists	Exists	Exists
	PFRA Methodology	N/A	N/A	N/A	Exists	On-going
	FHM and FRM Methodology	N/A	N/A	N/A	Exists	On-going
	FRMP Methodology	N/A	N/A	N/A	Exists	On-going
STRATEGY	Water Management Strategy	Ratification	N/A	Exists	N/A	Exist
PLANNING	FRMP	N/A	N/A	N/A	On-going	N/A
	Work plan to prepare FRMP	N/A	N/A/in P	N/A	Exists	N/A
	Flood Protection Plan	N/A	N/A	Exists	Exists	N/A
	Operational Flood Protection Plan	Exists	N/A/in P			Exists

N/A - not available
N/A/in P - in preparation

Table 2: Details on legislation, plans and strategies in the Sava River Basin riparian countries

DOCUMENTS		COUNTRIES				COMMENT	
GROUPS	TYPES	BiH		CROATIA	SLOVENIA		SERBIA
		FBiH	BiH - RS				
LEGISLATIVE	Climate change	N/A	N/A	N/A	N/A	N/A	Climate change directive has not been delivered at the EU level, so as a consequence there is no straightforward legislative in Sava River basin riparian countries
	Water Act	Water Act, OG 70/06	Water Act, OG 50/06	Water Act, OG 153/09	Water Act, OG 26/02, 26/08	Water Act, OG 30/10	
	PFRA Methodology	N/A	N/A	N/A	Rules on methodology to define flood risk areas and erosion areas connected to floods and classification of plots into risk classes	Ongoing activity according Art. 47. of Water Act, OG 30/10 (to be published in 2011)	It is expected that Croatia and Serbia will deliver this document soon.
	FHM and FRM Methodology	N/A	N/A	N/A	Ministerial decree on methodologies to define flood hazard and flood risk maps, OG 60/07	Ongoing activity according Art. 48. of Water Act, OG 30/10	
	FRMP Methodology	N/A	N/A	N/A	Decree on the detailed content and method of drawing up a flood risk management plan, OG 7/10	Ongoing activity according Art. 49.-51. of Water Act, OG 30/10	
STRATEGY	Water Management Strategy	Water Management Strategy is in the ratification process	N/A	Water Management Strategy, OG 91/08	N/A	Presently, Water management master plan (2001.) is used Water management strategy according to new Water act - in preparation (to be adopted in 2012)	Experts have not reported any official Strategy at this level adopted by Parliament

PLANNING	FRMP	N/A	N/A	N/A	Flood risk management plan of the Republic of Slovenia (2015-2021) (on-going)	N/A	
	Work plan to prepare FRMP	N/A	Action plan for FRM – in preparation	N/A	Work plan to prepare Flood risk management plan	N/A	
	Flood Protection Plan	N/A	N/A	National Plan of flood protection, OG 84/10	The Natural and Other Disasters Protection Act, OG 51/06	N/A	
	Operational Flood Protection Plan	Federal operative flood protection plan, OG 7/11	Main Operational Plan for Flood protection – in preparation			General Flood Defence Plan 2008-2013 Flood Defence Action Plan for 2011	Basis for the organization and execution of flood protection in Serbia

It is evident that Slovenia as EU member state has already transposed the EFD into the relevant legislative prepared, in order to meet the set deadlines. Croatia, as candidate country, being at the end of accession process, has started certain activities in preparing the adequate legislative and plans and is decisive to follow EFD and the deadlines. Serbia and BiH, without obligations to the EU, also continuously adjust legislative, strategies and plans to the EFD. There is lack of planning documents and strategies, except general and action flood protection plans. Besides Croatia, FBiH has already prepared its water management strategy that is under ratification process. Even though other countries do not have water management strategies as comprehensive documents, the other documents contain visions and actions of water management authorised bodies, particularly in the field of flood management.

However, the key issue is FRM methodology, since this is the common denominator for the FRMP for the whole basin. Slovenian legislation has Rules and Decree regarding this issue and Serbia also intends to make rulebooks in accordance with the EFD. In other countries no formal documents exist, but Croatia uses EFD guiding principles to perform preliminary flood risk assessment studies and BiH activities also follow that direction.

It is obvious that all Sava riparian countries have the same goals, but the level of formalisation through the legislation varies. Therefore, the Program for Development of the Flood Risk Management Plan in the Sava River Basin should respect the achievements of the countries that have already transposed most of the EFD into their water management systems, and at the same time be inspiring for the countries that are still in the process of binding the EFD methodology into their legislation, strategies and plans.

2.1 European Union and UNECE

There are two crucial documents that clearly express the EU policy in the field of water resources management and particularly in flood risk management. Firstly, there is DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy. Secondly, the most important document with European Economic Area (EEA) relevance is DIRECTIVE 2007/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2007 on the assessment and management of flood risks. The directives, especially the latter one, have directly influenced the activities in the Sava River Basin. Moreover, in May 2011 Council of the European Union delivered document "*Council conclusions on Integrated Flood Management within the European Union*". The conclusions underline and emphasise the need for integrated flood management in accordance with the Directives and call the Commission to take further measures.

At EU level, there are two important documents that formally address climate change issues with clear messages and recommendations. In the *Green Paper* EC addressed the assessment and management of floods. The paper stresses the need for prevention, protection and preparedness as well as importance of measures for risks reduction. The following *White paper* in its particular actions strongly recommends that climate change should be taken into account in the implementation of the EFD. It is also emphasizes that "*the River Basin Management Plans due in 2009 under the WFD will take into account the impacts of climate change and the next generation of plans due in 2015 should be fully climate-proofed*".

UNECE's Guidelines on Sustainable Flood Prevention intended to assist countries and joint bodies in developing and implementing sustainable measures and good management practices for flood prevention and protection that take account of economic, environmental and social considerations. However, the proposed guidelines are non-binding. These guidelines aim to recommend measures and best practices to prevent, control and reduce the adverse impact of flood events on human health and safety, on valuable goods and property, and on the aquatic and terrestrial environment. The emphasis is on development and implementation of sustainable measures and good management practices for flood prevention and protection that take account of economic, environmental and social considerations. Priority should be given to integrated water management measures for the whole catchment area rather than to the management of floods as such. Primary preventive measures include: building codes; legislation to relocate structures away from flood-prone areas; planning appropriate land use; adequately designed floodplains and flood-control structures; and early warning systems. Secondary preventive measures are those actions taken in response to early evidence of health impacts. They include all types of flood response, but also guidelines on how populations are to act during floods, as well as disease monitoring and correct risk communication. Physical planning as well as urban and rural development and construction should take into account the requirements of flood prevention and reduction, including the provision of retention areas.

2.2 ISRBC

In 2002 Bosnia and Herzegovina, Republic of Croatia, Republic of Slovenia and Republic of Serbia signed the Framework Agreement on the Sava River Basin in order to join their efforts on sustainable management of water resources of the Sava River Basin with the efforts of other countries and international institutions and arrangements present in the wider Danube Basin. Following this agreement the countries recognised the need to promote the cooperation and implementation of joint activities aimed at creating the conditions for sustainable flood protection in the Sava River Basin and in 2010 signed the Protocol on Flood Protection to the Framework Agreement on the Sava River Basin.

One of the strategic documents regarding flood management is Sava River Basin - Sub-Basin Level Flood Action Plan. It reviews the current situation in flood protection and sets the targets and the respective measures mostly aiming at the reduction of risk, potential damage and flood levels, by increasing the awareness of flooding and improvement of flood forecasting. The targets and measures are based on the regulation of land use and spatial planning, increase of retention and detention capacities, technical flood defences, preventive actions, capacity building, raising awareness, preparedness, and prevention and mitigation of water pollution due to floods. The Action plan is composed from Action plans prepared by contracting Parties to the Framework Agreement on the Sava River Basin: Slovenia, Croatia, Bosnia and Herzegovina, and Serbia. Recently, ISRBC released updated *Strategy on Implementation of the FASRB* and Action Plan for the Period 2011-2015 concerning the Strategy. The other relevant documents dealing with the flood related issues, prepared under cooperation and auspices of the Sava Commission, were also considered during the preparation of this Report.

2.3 Republic of Slovenia

The Flood risk management is high on the agenda of Slovenian Government, especially on the agenda of the Ministry of the Environment, its Environmental Agency, as well as of the Civil Protection Agency, acting inside the Ministry of Defence.

The floods in last 10 years, especially those in last two years (December 2008 and October 2010) caused substantial material damages on buildings, on cultural heritage, on economic activities and also on the environment. The flash flood event in Železniki in July 2007 caused also human casualties.

The analysis of causes pointed out the weaknesses in the flood forecasting, public awareness, urban planning and lack of adequate insurance instruments. It showed also a lack of integrated, basin wide planning and management of flood risks, as well as the underestimation of the changes in weather patterns. The frequency, the intensity and the extension of heavy rains are changing and causing all types of static and dynamic floods (urban, groundwater, flash and pluvial) and the abilities of people to adapt to those events are limited.

Therefore the Slovenian government is preparing administrative, strategic and structural and non-structural measures to adapt to changing climate and to reduce flood risks in line with EU legislation, national legislation and best practices, developed in last decades in EU, ECE and Danube region.

Slovenia is also aware that international cooperation is an important instrument to deal with changing climate and related flood risks. That is why Slovenia is following the latest EU research on meteorological and hydrological modelling and is preparing its national FRM plan, taking into account wider - international river basin objectives of Danube river basin in cooperation with Danube countries, Mura and Drava river basin in the cooperation with Austria and Hungary, and of Sava river basin in the cooperation with Sava river basin countries.

2.4 Republic of Croatia

Competent bodies for flood protection issues in Croatia are: Government of Croatia, Ministry of Regional Development, Forestry and Water Management as a state administration body and Croatian Waters as a state agency responsible for developing and implementing legal provisions. The Water Act was introduced in Croatia as a Framework for integrated water management that is in compliance with the EU Flood Directive 2007/60/EC. The conditions for the establishment of flood protection and flood risk management with several provisions are also provided. Current state of legislation (laws and provisions), plans and strategies related to flood management and climate change in Croatia are presented with following main groups of legal documents:

- International agreements in force, related to the Climate Change (CC) or FRM - International Agreement on Climate Change;
- The principal policy document related to the floods is the Water Management Strategy;
- Several Provisions:
 - Regulation on the content, process and methodology for adoption of the Water Strategy and River Basin Management Plan,
 - Decision on the Establishment of a National Commission on Climate Change;
- The State Flood Defence Plan and amendments to this plan in 2010;
- The action plans:
 - Action plan for the preparation and adoption of river basin management plan,

- Action plan for the development of acts under Article 249 of Water Act with the Framework Plan of the first river basin management plan.

The last of the above mentioned action plans that includes the FRMP provides a timetable for the implementation of a three-steps approach

1. Preliminary assessment of flood risk,
2. Flood hazard maps and flood risk map,
3. Flood Management Plan

The third step should be coordinated with the activities on preparation of River Basin Management Plan and it is planned to complete by the end of 2015. At the end of 2015 the RBMP should be adopted. In addition, The Flood Risk Management Plan will be also adopted by the end of 2015 under the provisions of the EU FD on the assessment and management of flood risks (FD 2007/60/EC). It will become an integral part of the first amendment to that RBMP.

The National Plan for Flood Protection establishes an International Water Management Commission as a mechanism for harmonization of policies for flood protection in transboundary areas. The developed plans for the protection and rescue provide operational and logistical support to Croatian Waters. The Plan defines the use of the resources required for implementation of both information and early warning systems. It stipulates the obligations of the Croatian Waters in maintaining and adjusting communication and information systems to the needs of the main centre for flood protection. In addition, Croatian Waters need to connect these systems with systems of other relevant bodies and institutions.

National Plan for Flood Protection points to the organizational objectives of flood risk management. It also states that those objectives must be regulated according provisions of existing plans for flood risk management, and in accordance with the provisions of the Water Act. To ensure effective connectivity of national flood protection notification and warning systems with other similar systems, the plan establishes an obligation for Croatia to create a Protocol on both data and information exchange related to the flood protection including the FRM.

Water Management Strategy is the roof document on the state-level. It defines the legislative, organizational, financial, technical, and scientific and IT aspects of flood risk management activities in the present socio-economic circumstances of the accession process of the Republic of Croatia to the European Union, as well as in the future circumstances of the full membership. The Strategy determines the targets for effective flood protection. The goal will be achieved through the gradual implementation of the works on rehabilitation and reconstruction of structures and through the implementation of development projects. Croatian Waters will implement the maintenance of the protective systems on the water resources of level II and I. The Counties will implement the maintenance of detailed canal network for drainage and irrigation.

Action Plan for Preparation and Adoption of RBMP is based on description of activities related to FRM and on their time-line. The Action Plan is a concise but comprehensive in a description of the methodologies used for establishing RBMP. The methodology for establishing RBMP is expressed by a series of activities like public consultation on the draft plan with all stakeholders related to water use. Activities related to the preparation of FRMP should be conducted in parallel with activities from the Action Plan with respect to climate change. Croatian

Government will bring country RBM plans for Danube River Basin region (which will include the Sava RBM plan) and Adriatic River Basin.

The plan for the development of acts under article 249 of Water Act with the framework plan of the first river basin management plan deals with harmonization of legislation as well as with setting a framework for development of the first RBMP in Croatia.

2.5 Bosnia and Herzegovina

The development of flood risk management concept in BiH in present circumstances (after-conflict period) should have taken into account both past state and completely new conditions following relationships and standards defined at upper planning levels (entity, inter-entity, state, interstate) and lower levels (cantons, inter-canton, municipality, inter-municipality). Bearing in mind such extreme regional and local decomposition it would be difficult (if not impossible) to apply “bottom up” principle without harmonization within river basins, especially within the Sava River Basin.

The activities related to the development of flood risk management plan have considered real situation and resulted in the following findings which could be the basis for the future projects:

- Areas either defined for accumulations and inundations by official physical plans in BiH or corridors of the major watercourses which are occupied with new development (residential and other buildings) are resulting in directing flood risk management concept towards application of irrational, expensive and environmentally non-friendly solutions.
- Due to degradation of forest and land cover, the retention capacity of the basin has been severely lowered, thus affecting the efficient flood risk management. Therefore, urgent measures in accordance with EU directives have to be undertaken to stop such processes.
- The water resources planners have less possibility to develop the environmentally sound plans because the other uncontrolled activities continually raise flood risks and prevent relevant institutions to apply FRM measures. The typical uncontrolled activities are: illegal developments, unplanned deforestation and other misuse of water related resources (like hydraulic structures, levies and river sediment exploration).
- Protective measures defined by the law have not been applied efficiently and effectively and have not been coordinated by the relevant institutions. This makes the implementation of present and future flood risk management concept in BiH very difficult and sometimes impossible.
- The important part of the documentation, created before the conflict in BiH, has been destroyed, including the monitoring network. The lack of financing for establishment of long-term plans has slowed down the documentation development and even when financing has been approved the development could not be performed because of the strong objections coming from involved and concerned communities.

2.6 Republic of Serbia

Flood risk management in the Republic of Serbia is regulated under the Water Law enacted in May 2010, while preparation of related provisions is still in progress. Although the Republic of Serbia is not an EU candidate country, the EU FD 2007/60/EC of the European Parliament and of the Council on the assessment and management of flood risks was almost fully transposed in the Serbian Water Law. Articles 47-51 are devoted to three steps of flood risk management planning. The flood risk management plans per Article 49 of this Law shall be delivered by the year 2017, while dates for following steps (preliminary flood risk assessment and delivery of flood hazard and flood risk maps) are not set yet.

According to the Water Law, the following institutions will be involved in the flood risk management planning:

- Ministry of Agriculture, Trade, Forestry and Water Management of the Republic of Serbia – Republic Directorate for Water;
 - Republička direkcija za vode Beograd;
- Public Water Management Companies:
 - PWMC “Srbijavode” – Belgrade (in charge for the right bank of the Sava River, and the Drina and the Kolubara river basins - Water district “Sava”),
 - PWMC “Vode Vojvodine” – Novi Sad (in charge for the left bank of the Sava River and the Bosut River – Water district “Srem”) and
 - PWMC “Beogradvode” for the territory of the Belgrade city (Water district “Beograd”);
- Republic Hydrometeorological Service of Serbia.

3. Inventory of legislation, plans, strategies and documents

The inventory of the actual legislative documents, plans, and strategies are given in form of the tables in the following order:

1. EU and UNECE
2. ISRBC
3. National level
 - 3.1 Slovenia
 - 3.2 Croatia
 - 3.3 BiH
 - 3.4 Serbia

3.1 EU and UNECE legislation and documents

Legislative document: DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a framework for Community action in the field of water policy
Relation to the other legislative documents: EU Flood Directive 2007/60/EC
Valid from : 2000
Short description: The purpose of this Directive is to establish: <ul style="list-style-type: none">- Framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater,- Coordination of administrative arrangements within river basin districts,- Environmental objectives for: surface waters, groundwater, protected areas,- Analysis of characteristics of the river basin district, review of the environmental impact of human activity and economic analysis of water use,- Register of protected areas,- Identification of waters used for the abstraction of drinking water,- Monitoring of surface water status, groundwater status and protected areas,- Recovery of costs for water services,- Combined approach for point and diffuse sources,- Programme of measures, taking account of the results of the required analyses in order to achieve the established objectives of this Directive,- River basin management plans:<ol style="list-style-type: none">1. Member States shall ensure that a river basin management plan is produced for each river basin district lying entirely within their territory.2. In the case of an international river basin district falling entirely within the Community, Member States shall ensure coordination with the aim of producing a single international river basin management plan. Where such an international river basin management plan is not produced, Member States shall produce river basin management plans covering at least those parts of the international river basin district falling within their territory to achieve the objectives of this Directive.3. In the case of an international river basin district extending beyond the boundaries of the Community, Member States shall endeavour to produce a single river basin management plan, and, where this is not possible, the plan shall at least cover the portion of the international river basin district lying within the territory of the Member State concerned.4. The river basin management plan shall include the information detailed in Annex VII.5. River basin management plans may be supplemented by the production of more detailed programmes and management plans for sub-basin, sector, issue, or water type, to deal with particular aspects of water management. Implementation of these measures shall not exempt Member States from any of their obligations under the rest of this Directive.6. River basin management plans shall be published at the latest nine years after the date of entry into force of this Directive.7. River basin management plans shall be reviewed and updated at the latest 15 years after the date of entry into force of this Directive and every six years thereafter.- Public information and consultation,- Reporting,- Strategies against pollution of water,- Strategies to prevent and control pollution of groundwater,- Commission report,

- Plans for future Community measures.

Directive establishing a framework for Community action in the field of water policy requires river basin management plans to be developed for each river basin district in order to achieve good ecological and chemical status, and it will contribute to mitigating the effects of floods. However, reducing the risk of floods is not one of the principal objectives of this Directive, nor does it take into account the future changes in the risk of flooding as a result of climate change.

Legislative document: DIRECTIVE 2007/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the assessment and management of flood risks

Relation to the other legislative documents:

EU Water Directive 2000/60/EC

Valid from : 2007

Short description: The purpose of this Directive is to establish a framework for the assessment and management of flood risks, aiming at the reduction of the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in the Community. Effective flood prevention and mitigation requires, in addition to coordination between Member States, cooperation with third countries. The damage caused by flood events may also vary across the countries and regions of the Community. Hence, objectives regarding the management of flood risks should be determined by the Member States themselves and should be based on local and regional circumstances. In order to have available an effective tool for information, as well as a valuable basis for priority setting and further technical, financial and political decisions regarding flood risk management, it is necessary to provide for the establishing of flood hazard maps and flood risk maps showing the potential adverse consequences associated with different flood scenarios, including information on potential sources of environmental pollution as a consequence of floods. In this context, Member States should assess activities that have the effect of increasing flood risks. Flood risk management plans should focus on prevention, protection and preparedness. With a view to giving rivers more space, they should consider where possible the maintenance and/or restoration of floodplains, as well as measures to prevent and reduce damage to human health, the environment, cultural heritage and economic activity. The elements of flood risk management plans should be periodically reviewed and if necessary updated, taking into account the likely impacts of climate change on the occurrence of floods. The solidarity principle is very important in the context of flood risk management. Development of river basin management plans under Directive 2000/60/EC and of flood risk management plans under this Directive are elements of integrated river basin management. PRELIMINARY FLOOD RISK ASSESSMENT - Member States shall, for each river basin district, or unit of management, or the portion of an international river basin district lying within their territory, undertake a preliminary flood risk assessment. Based on available or readily derivable information, such as records and studies on long term developments, in particular impacts of climate change on the occurrence of floods, a preliminary flood risk assessment shall be undertaken to provide an assessment of potential risks. The assessment shall include at least the following:

- maps of the river basin district at the appropriate scale including the borders of the river basins, sub-basins and, where existing, coastal areas, showing topography and land use;
- a description of the floods which have occurred in the past and which had significant adverse impacts on human health, the environment, cultural heritage and economic activity and for which the likelihood of similar future events is still relevant, including their flood extent and conveyance routes and an assessment of the adverse impacts they have entailed;
- a description of the significant floods which have occurred in the past, where significant adverse consequences of similar future events might be envisaged and depending on the specific needs of Member States.

Member States shall complete the preliminary flood risk assessment by 22 December 2011.

FLOOD HAZARD MAPS AND FLOOD RISK MAPS - Member States shall, at the level of the river basin

district, or unit of management, prepare flood hazard maps and flood risk maps, at the most appropriate scale for the areas. Flood hazard maps shall cover the geographical areas which could be flooded according to the following scenarios:

- a) floods with a low probability, or extreme event scenarios;
- b) floods with a medium probability (likely return period ≥ 100 years);
- c) floods with a high probability, where appropriate.

For each scenario referred to in paragraph the following elements shall be shown:

- a) the flood extent;
- b) water depths or water level, as appropriate;
- c) where appropriate, the flow velocity or the relevant water flow.

Flood risk maps shall show the potential adverse consequences associated with flood scenarios.

FLOOD RISK MANAGEMENT PLANS - shall address all aspects of flood risk management focusing on prevention, protection, preparedness, including flood forecasts and early warning systems and taking into account the characteristics of the particular river basin or sub-basin. Flood risk management plans may also include the promotion of sustainable land use practices, improvement of water retention as well as the controlled flooding of certain areas in the case of a flood event.

Legislative document: GREEN PAPER Adapting to climate change in Europe – options for EU action

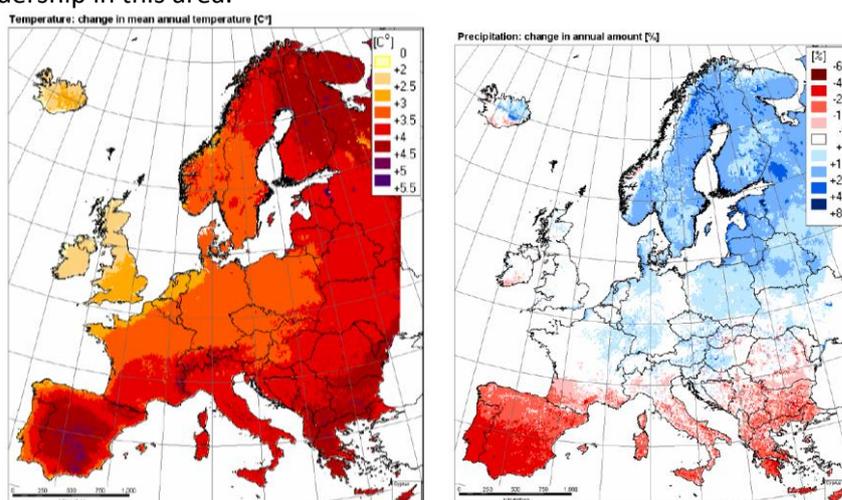
Relation to the other legislative documents:

WHITE PAPER - Adapting to climate change: Towards a European framework for action

In force since : 2007

Short description:

This Green Paper examines climate change impacts in Europe, the case for action and policy responses in the EU. It focuses on the role of the EU, but takes account of the prominent role of Member State, regional and local authorities in any efficient adaptation strategy. As the adaptation challenge is global by its very nature, the Green Paper also raises the external dimension and looks at adaptation measures in Europe that could also apply to other parts of the world, and the opportunity for the EU to provide international leadership in this area.



Source: GREEN PAPER Adapting to climate change in Europe – options for EU action
Figure 1: Change in mean annual temperature and precipitation by the end of this century

The most vulnerable areas in Europe in terms of floods are (see Figure 1) densely populated floodplains due to increased risks for storms, intense rainfall and flash floods leading to widespread damages to built-up areas and infrastructure.

In the Green Paper EC addressed the assessment and management of floods. The paper stresses the need for prevention, protection and preparedness as well as importance of measures for risks reduction.

Legislative document: WHITE PAPER - Adapting to climate change: Towards a European framework for action

Relation to the other legislative documents:

GREEN PAPER on Adapting to Climate Change in Europe

COMMISSION STAFF WORKING DOCUMENT - Climate Change and Water, Coasts and Marine Issues

In force since : 2009

Short description:

This White Paper sets out a framework to reduce the EU's vulnerability to the impact of climate change. It builds on the wide-ranging consultation launched in 2007 by the Green Paper on Adapting to Climate Change in Europe and further research efforts that identified action to be taken in the short-term. The framework is designed to evolve as further evidence becomes available. It will complement action by Member States and support wider international efforts to adapt to climate change, particularly in developing countries. The EU is working with other partner countries in the UNFCCC towards a post-2012 climate agreement which will address adaptation as well as mitigation.

Enhancing the EU's resilience to the impacts of climate change also means the chance to invest in a low-carbon economy, for instance, by promoting energy efficiency and the uptake of green products. This is one of the key objectives of the European Economic Recovery Plan, which outlines the EU's response to the economic crisis, leading us to a creative, knowledgebased economy. At the same time, we can facilitate structural changes through the modernisation of European infrastructure and enhance the competitiveness of our economy.

Developing this framework has been a cross-cutting exercise and this White paper is accompanied by three sectoral papers on agriculture, health and water, coasts and marine issues. Further sectoral papers may be presented in the future.

The **objective** of the EU's Adaptation Framework is to improve the EU's resilience to deal with the impact of climate change. The framework will respect the principle of subsidiarity and support overarching EU objectives on sustainable development.

The EU's framework adopts a phased approach. The intention is that phase 1 (2009-2012) will lay the ground work for preparing a comprehensive EU adaptation strategy to be implemented during phase 2, commencing in 2013. Phase 1 will focus on four pillars of **action**: 1) building a solid knowledge base on the impact and consequences of climate change for the EU, 2) integrating adaptation into EU key policy areas; 3) employing a combination of policy instruments (market-based instruments, guidelines, public-private partnerships) to ensure effective delivery of adaptation and 4) stepping up international cooperation on adaptation.

For phase 1 to be a success, the EU, national, regional and local authorities must cooperate closely.

Document: GUIDANCE ON WATER AND ADAPTATION TO CLIMATE CHANGE**Funding institution:**

UNECE - United Nations Economic Commission for Europe

Contact institution/person:

UNECE, Palais des Nations, 8 -14 avenue de la Paix, 1211 Geneva 10, Switzerland
<http://www.unece.org/env/water/welcome.html>

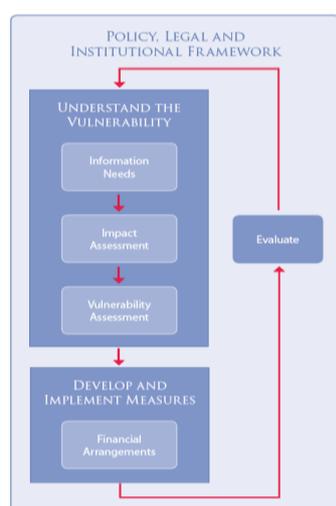
Starting date : 2009**Ending date:** N/A**Description of the activity:**

This Guidance aims to support decision makers from the local to the transboundary and international level by offering advice on the challenges caused by climate change to water management and water-related activities and thereby to develop adaptation strategies. It builds on the concept of IWRM, which many countries are in the process of implementing. Climate change adds to the complexity of its implementation. The Guidance addresses the additional challenges of climate change but does not address IWRM as a whole. The Guidance addresses not only extreme events but also water management in general under the influence of climate change and variability and related uncertainty. The Guidance aims to put special emphasis on the specific problems and requirements of transboundary basins, with the objective of preventing, controlling and reducing transboundary impacts of national adaptation measures and thereby preventing and resolving possible conflicts related to the impact of climate change on water resources. However, the Guidance is based on the existing very partial experience on adaptation to climate change in the transboundary context and reflects this incomplete knowledge. The Guidance is a general strategic roadmap towards adaptation of water management to climate change but needs to be tailored to specific local situations. Therefore it does not provide a detailed overview of all possible measures or elements of an adaptation strategy since these depend on the local and sector context. Annex 2 of these Guidelines provides a check list for guidance-users for self-assessment of their level of progress towards adaptation to climate change. The key target groups of the Guidance are decision makers and water managers working in ministries and other authorities, in particular at the transboundary level.

Methodology used for assessment of FRM and climate change:

The Guidance provides a framework to develop step-by-step an adaptation strategy (see Figure 1) taking into account the usual barriers.

The key-steps for the development of an adaptation strategy are:



- Establish the policy, legal and institutional framework:
 - Assess existing international commitments, policies, laws and regulations for water and related sectors;
 - Define the institutional processes;
- Understand the vulnerability of society:
 - Ascertain the information needed to assess vulnerability;
 - Gauge the future effects of climate change on the hydrological conditions of the specific transboundary basin in terms of water demand and water availability;
 - Identify the main current and climate-induced vulnerabilities that affect communities,
- Develop, finance and implement an adaptation strategy:
 - Identify potential adaptation measures to reduce vulnerability to climate change and climate variability by preventing negative effects;
 - Based on participatory processes, prioritize the potential measures and investments needed taking into account the financial and institutional resources and other means and knowledge available to implement them;
- Ensure the step-by-step implementation of the adaptation strategy;
- Evaluate:
 - Determine whether the measures are implemented and if those measures that are implemented lead to reduction of vulnerability; if not, adjust the measures accordingly;
 - Assess whether the scenarios as applied materialize in practice and adjust them accordingly.

3.2 ISRBC legislation, plans, strategies

Legislative document: FRAMEWORK AGREEMENT ON THE SAVA RIVER BASIN
Relation to the other legislative documents: Convention on the Regime on the Navigation on the Danube (Belgrade, 1948.), Convention on Cooperation for the Protection and Sustainable Use of the Danube River (Sofia, 1994.), Directive 2000/60/EC of the EU Parliament and Council of October 23, 2000, Establishing a Framework for Community Activities in the Field of Water Policy
Valid from: 2004
Short description: Bosnia and Herzegovina, Republic of Croatia, Republic of Slovenia and Federal Republic of Yugoslavia (hereinafter: Parties), recognizing the vital importance of trans-boundary co-operation for the Parties aimed towards sustainable development of the Sava River Basin, participate in the preparation of this document in Kranjska Gora, on December 3rd, 2002. Parties have joined to make this agreement in order to join their efforts on sustainable management of water resources of the Sava River Basin with the efforts of other countries and international institutions and arrangements present in the Danube Basin. Furthermore, the Parties shall cooperate in order to achieve several goals, two of these goals are directly related to FRM: <ul style="list-style-type: none">- Establishment of sustainable water management,- Undertaking of measures to prevent or limit hazards, and reduce and eliminate adverse consequences including those from floods. For the purpose of carrying out previously stated goals the Parties shall cooperate in the process of the creation and realization of joint plans and development programs of the Sava River Basin and harmonization of their legislation with EU legislation. This is primarily related to their cooperation on the basis of, and in accordance with the EU Water Directive 2000/60/EC. In realization of this Agreement, the Parties shall especially cooperate with: <ul style="list-style-type: none">- The International Commission for Protection of Danube River (ICPDR),- The Danube Commission,- The United Nations Economic Commission for Europe (UN/ECE), and- Institutions of the European Union. Areas of cooperation of the parties are also defined. In this sense, are identified several interesting areas of cooperation relating to the FRM such as: Sustainable water management; Extraordinary impacts on the water regime; and Development of The Sava River Basin Management Plan. Thus, the Parties agree to cooperate on management of the waters of the Sava River Basin in a sustainable manner, which includes integrated management of surface and ground water resources, in a manner that shall provide for, among other things, a protection against detrimental effects of water like flooding. The Parties also agree to develop joint and /or integrated Plan on the management of the water resources of the Sava River Basin and to cooperate on its preparatory activities (stated cooperation shall be coordinated with activities of the ICPDR). In accordance with that agreement the Parties on the proposal of the International Sava River Basin Commission shall adopt The Sava River Basin Management Plan. Furthermore, the Parties shall establish a coordinated or joint system of measures, activities, warnings and alarms in the Sava River Basin for extraordinary impacts on the water regime, such as flooding. Annex to this Agreement is The Statute of the International Sava River Basin Commission.

Legislative document: PROTOCOL ON FLOOD PROTECTION TO THE FRAMEWORK AGREEMENT ON THE SAVA RIVER BASIN

Relation to the other legislative documents:

Framework Agreement on the Sava River Basin (FASRB)

EU Water Directive 2000/60/EC

EU Flood Directive 2007/60/EC

Signed in 2010, ratification in course

Short description:

This document presents the basis of the cooperation in the transboundary FRM in the SRB. Bosnia and Herzegovina, Republic of Croatia, Republic of Serbia and Republic of Slovenia (hereinafter: the Parties) agreed that they all:

- recognize the need to promote the cooperation and implementation of joint activities aimed at creating the conditions for sustainable flood protection in the Sava River Basin,
- have in mind the Directive 2000/60/EC on setting the framework for activities of the Community in the sector of the water policy and Directive 2007/60/EC on the assessment and management of the flood risks,
- recognize the likely consequences of climate change on the water regime on the Sava River Basin and the need of effective adaptation measures,
- are aware of importance of the cooperation in flood management in the Sava River Basin,
- are aware of the need to implement this Protocol in a coherent way and consistent with integration processes of the European Union.

This Protocol regulates the issues of sustainable flood protection in the Sava River Basin caused by:

- a) natural phenomena such as high flows of rivers, as well as ice jamming, and
- b) artificial impacts like water discharge from reservoirs and retentions induced by dam collapsing or inadequate handling, changes in river basin, riverbeds and floodplains, etc.,

with aim to prevent or limit flood hazard, to reduce flood risk and to reduce or mitigate detrimental consequences of floods.

With aim to achieve the objectives of this Protocol the Parties shall cooperate on:

- a) Preparation of the Program for development of the Flood Risk Management Plan in the Sava River Basin;
- b) Undertaking of Preliminary Flood Risk Assessment;
- c) Preparation of Flood Maps;
- d) Development of Flood Risk Management Plan in the Sava River Basin;
- e) Establishment of the Flood Forecasting, Warning and Alarm System in the Sava River Basin;
- f) Exchange of information significant for sustainable flood protection;
- g) Implementation of all measures and activities of mutual interest, originating from planning documents or activities from items (a) to (f) above or other mutually agreed measures and activities.

Strategy document: STRATEGY ON IMPLEMENTATION OF THE FRAMEWORK AGREEMENT ON THE SAVA RIVER BASIN

Responsible institution: International Sava River Basin Commission (ISRBC)

Starting date of the implementation: 2011.

Contact institution/person:
ISRBC, Kneza Branimira 29/II, Zagreb, Croatia
Web: <http://www.savacommission.org>

Important documents directly related to the strategy: FRAMEWORK AGREEMENT ON THE SAVA RIVER BASIN, ACTION PLAN FOR THE PERIOD 2011-2015

Description of the strategy:

The Strategy has been developed with the primary intention to make a full use of the efforts and achievements made so far, to synchronize the experiences and the new knowledge gained during the past years, to respond to, and to get involved into, the relevant ongoing processes on the Danube and European levels, and thus to further strengthen the basis for full implementation of the FASRB.

The Strategy starts with the framework for transboundary cooperation in the Sava River Basin providing basic information on the basin, as well as the legal and institutional framework for the cooperation, represented by the FASRB and the ISRBC, respectively. The current status of the FASRB implementation, including the main accomplishments and challenges experienced so far, is also illustrated. The Strategy continues with objectives of the FASRB implementation and the measures for their achievement are elaborated with regard to individual priority areas, each of them corresponding to a specific objective of the FASRB. At the end the issues of public participation and stakeholder involvement in the FASRB implementation, and the monitoring of the FASRB implementation are elaborated.

Methodology proposed for assessment of FRM and climate change:

The Strategy supports the methodology already developed by EFD and relies on the on-going projects related to SRB.

Plan title: SUB-BASIN LEVEL FLOOD ACTION PLAN - SAVA RIVER BASIN	
Responsible institution: Flood Protection Expert Group - International Commission for the Protection of the Danube River (ICPDR) in cooperation with International Sava River Basin Commission (ISRBC)	Contact institution/person: ICPDR, Vienna International Centre D0412 P.O. Box 500, A-1400 Vienna, Austria web: http://www.icpdr.org ISRBC, Kneza Branimira 29/II, Zagreb, Croatia Web: http://www.savacommission.org
Important documents directly related to the plan: PROTOCOL ON FLOOD PROTECTION TO FASBR FLOOD ACTION PROGRAMME: ACTION PROGRAMME FOR SUSTAINABLE FLOOD PROTECTION IN THE DANUBE RIVER BASIN EU Flood Directive 2007/60/EC	
Starting date : 2009	Ending date: N/A
Description of the plan: This action plan for the Sava River sub-basin reviews the current situation in flood protection and sets the targets and the respective measures aiming among others to reduction of damage risks and flood levels, increasing the awareness of flooding and to improvement of flood forecasting. The targets and measures are based on the regulation of land use and spatial planning, increase of retention and detention capacities, technical flood defences, preventive actions, capacity building, awareness & preparedness raising and prevention and mitigation of water pollution due to floods. This Action plan has been derived from Action plans prepared by Bosnia & Herzegovina, Croatia, Serbia and Slovenia, contracting Parties to the Framework Agreement on the Sava River Basin (FASRB). In preparation of this common FAP, the recent documents dealing with the flood related issues prepared under umbrella of the Sava Commission were also taken into account. This document also provides a list of Competent Authorities in the Sava River Basin.	
Methodology used for assessment of FRM and climate change: Methodology that was used for assessment of flood risk management and climate change is based on the definition of the topography, climate and hydrology, floodplains and flood defences, institutional and legal framework. Hydrological data for the main hydrometric stations on the Sava River are presented. The data source is the Hydrological Study of the Sava River – 1976, (Sava Project Coordinating Board, Zagreb and Institute for Water Management “Jaroslav Cerni“, Belgrade, 1976). This was the last harmonized data on the basin – wide level, performed in the former Yugoslavia, before the Sava River became a transboundary river. Based on the results of several important hydrological studies prepared for the Sava River Basin, it is concluded that floods in the Sava Basin usually appear in the spring and in the autumn. Spring floods are the result of snow melting, while autumn floods are caused by heavy rainfall.	

Plan title: ACTION PLAN FOR THE PERIOD 2011-2015	
Responsible institution: International Sava River Basin Commission (ISRBC)	Contact institution/person: ISRBC, Kneza Branimira 29/II, Zagreb, Croatia Web: http://www.savacommission.org
Important documents directly related to the plan: STRATEGY ON IMPLEMENTATION OF THE FRAMEWORK AGREEMENT ON THE SAVA RIVER BASIN	
Starting date : 2011	Ending date: 2015
Description of the plan: The Action Plan presents an accompanying document to the Strategy on Implementation of the FASRB, providing a list of actions necessary to be undertaken in order to ensure an effective implementation of the FASRB in the period 2011-2015. The actions are divided into several groups – priority areas, each of the priority areas corresponding to a specific objective of the FASRB, and listed in a table form. For each action, the starting and ending years are defined, and the prerequisites for realization of the action are indicated. The actions concern the following:	
<ul style="list-style-type: none"> - Navigation, - sustainable water management in the basin, - measures to prevent or limit hazards, and reduce and eliminate adverse consequences, including those from floods, ice hazards, droughts and incidents involving substances hazardous to water, - river basin management, - flood management, - accident prevention and control, - cross-cutting issues & public participation and stakeholder involvement to facilitate the FASRB implementation in the fields of navigation and integrated water management. 	
Methodology used for assessment of FRM and climate change: N/A	

3.3 National legislation, plans, strategies and documents

Legislative document: RATIFICATION OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE
Relation to the other legislative documents: N/A
Valid from : 1996 - Slovenia; 1996 - Croatia; 2000 - BiH; 2001 - Serbia
Short description: The ultimate objective - Stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. One of the many starting points for setting this goal applies to floods. In fact, the Convention is recognising that countries with areas liable to floods are particularly vulnerable to the adverse effects of climate change. Croatia, which is to some extent affected by floods, ratifies this strategic document. This document foster Parties to: <ul style="list-style-type: none">- cooperate in preparing for adaptation to the impacts of climate change,- develop appropriate and integrated water management plans for the protection and rehabilitation of areas affected by floods. Parties to the Convention commit themselves to strive to achieve the objectives of the Convention. To achieve these goals of their activities should be conducted in accordance with the principles related to the link between climate change and FRM. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Especially this applies to countries with areas liable to floods because they are particularly vulnerable to the adverse effects of climate change. Efforts to address climate change and flooding as a phenomenon associated with these changes may be carried out cooperatively by interested Parties. They also (Parties) have a right to, and should, promote sustainable development. Policies and measures to protect the climate; system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account, that economic development is essential for adopting measures to address climate change. All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall cooperate in preparing for adaptation to the impacts of climate change. This means to develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas affected by floods. In carrying out their commitments the Parties shall: <ul style="list-style-type: none">- Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort;- Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction.

3.3.1 Slovenia

Legislative document: ZAKON O VODAH - WATER ACT, OG 26/02 and amended 26/08 http://www.mop.gov.si/si/zakonodaja_in_dokumenti/veljavni_predpisi/zakon_o_vodah/#c17364
Relation to the other legislative documents: Zakon o varstvu okolja - Environmental Law
Valid from: issued in Official Gazette (OG, 26/2002 and amended 26/2008)
Short description: It represents a legal framework for integrated water management (objectives: good status of water bodies, reduction of flood risks, good environmental status of marine waters).

Legislative document: UREDBA O VSEBINI IN NAČINU PRIPRAVE PODROBNEJŠEGA NAČRTA ZMANJŠEVANJA OGROŽENOSTI PRED POPLAVAMI - GOVERNMENTAL DECREE DEFINING DETAILED CONTENT OF FLOOD RISK MANAGEMENT PLAN, WORK PLAN TO PREPARE FRMP, OG 7/10 http://www.mop.gov.si/si/zakonodaja_in_dokumenti/veljavni_predpisi/zakon_o_vodah/#c17364
Relation to the other legislative documents: it is based on the article 60a of the Water law
Valid from : Issued in OG, N 7/2010
Short description: It defines the detailed content, the procedure and the timetable to prepare Flood risk management plans for the river basins on the national territory of Slovenia and also the coordination process with neighbouring countries in an international basin, such as Sava RB. The Work plan is a ministerial document, defining detailed steps of the preparative process of the first FRMP.

Legislative document: PRAVILNIK O METODOLOGIJI ZA DOLOČANJE OBMOČIJ, OGROŽENIH ZARADI POPLAV IN Z NJIMI POVEZANE EROZIJE CELINSKIH VODA IN MORJA, TER O NAČINU RAZVRŠČANJA ZEMLIŠČ V RAZREDE OGROŽENOSTI - MINISTERIAL DECREE ON METHODOLOGIES TO DEFINE FLOOD HAZARD AND FLOOD RISK MAPS, OG 60/07

http://www.mop.gov.si/si/zakonodaja_in_dokumenti/veljavni_predpisi/zakon_o_vodah/#c17364

Relation to the other legislative documents:

It is based on article 83 of the Water law

Valid from: Issued in OG, N 60/2007

Short description:

It defines a methodology to prepare and present flood hazard maps, erosion maps as consequences of flooding and flood risk maps. Methodology is based on parameter of "water height" and/or parameter of "water height multiplied with velocity". Comparable methodology is in use throughout the Rhine basin countries and it suits the hydrological conditions of most of Slovenia's rivers. The flood hazard and flood risk maps for Slovenian part of Sava RB will be prepared, using the defined methodology.

Legislative document: UREDBE O POGOJIH IN OMEJITVAH ZA IZVAJANJE DEJAVNOSTI IN POSEGOV V PROSTOR NA OBMOČJIH , OGROŽENIH ZARADI POPLAV IN Z NJIMI POVEZANE EROZIJE CELINSKIH VODA IN MORJA - GOVERNMENTAL DECREE ON CONDITIONS AND LIMITATIONS FOR CONSTRUCTION AND ACTIVITIES IN FLOOD HAZARD AREAS, OG 89/08

http://www.mop.gov.si/si/zakonodaja_in_dokumenti/veljavni_predpisi/zakon_o_vodah/#c17364

Relation to the other legislative documents:

It is based on articles 61, 82, 85,86,and 87 of the Water Law

Valid from : Issued in OG, N 89/2008

Short description:

It is defining conditions and limitations for constructing buildings and performing activities in flood risk areas. It is based on flood hazard maps.

Legislative document: ZAKON O METEOROLOŠKI DEJAVNOSTI - ACT ON METEOROLOGICAL SURVEY, OG 51/06

http://www.mop.gov.si/si/zakonodaja_in_dokumenti/veljavni_predpisi/zakon_o_meteoroloski_dejavnosti/

Relation to the other legislative documents:

Related to Environmental and Water act

Valid from : Issued in OG, N 51/2006

Short description:

Defining meteorological survey, analysis and prediction, as well as its organizational and financing aspects.

<p>Legislative document: ZAKON O VARSTVU OKOLJA - ENVIRONMENTAL ACT, OG 70/2008 http://www.mop.gov.si/si/zakonodaja_in_dokumenti/veljavni_predpisi/zakon_o_varstvu_okolja/</p>
<p>Relation to the other legislative documents: Environmental Framework legislation</p>
<p>Valid from : Issued in OG, N 70/2008</p>
<p>Short description: Related to flood risk it is defining hydrological monitoring and flood alert systems, as part of environmental as well as flood risk monitoring.</p>

<p>Legislative document: ZAKON O VARSTVU PRED NARAVNIMI IN DRUGIMI NESREČAMI - NATURAL DISASTER AND OTHER DISASTERS ACT, OG 51/06 http://zakonodaja.gov.si/rpsi/r04/predpis_ZAKO364.html</p>
<p>Relation to the other legislative documents: parallel to Water Act</p>
<p>Valid from : Issued in OG, N 51/2006</p>
<p>Short description: Defining the obligations to prepare, organize and implement Contingency plans at national and local level, as an important segment of preparedness and emergency planning. It gives the legal basis for transboundary cooperation in flood emergency conditions.</p>

<p>Legislative document: POGODBA MED VLADO RS IN VLADO R HRVAŠKE O UREJANJU VODNOGOSPODARSKIH RAZMERIJ - TREATY BETWEEN THE GOVERNMENT OF THE REPUBLIC OF CROATIA AND THE GOVERNMENT OF THE REPUBLIC OF SLOVENIA ON THE SETTLEMENT OF WATER MANAGEMENT RELATIONS, OG 75/97 OKVIRNI SPORAZUM O SAVSKEM BAZENU - ACT RATIFYING THE FRAMEWORK AGREEMENT ON THE SAVA RIVER BASIN, OG 71/2004 http://www.mop.gov.si/si/zakonodaja_in_dokumenti/veljavni_predpisi/mednarodne_pogodbe/</p>
<p>Relation to the other legislative documents: Water act</p>
<p>Valid from : issued in Official Gazette (OG, N 75/1997), issued in Official Gazette (OG, N 71/2004)</p>
<p>Short description: Defining issues, objectives and principles of cooperation of national responsible bodies in the field of water management.</p>

Plan title: FLOOD RISK MANAGEMENT PLAN OF THE REPUBLIC OF SLOVENIA (2015-2021)	
Responsible institution: Ministry of the Environment and Spatial planning, Dunajska 48 , 1000 Ljubljana , e-mail: gp.mop@gov.si	Contact institution/person: Institute for Water of Rep. Of Slovenia, Darko Anzeljc, Darko.Anzeljc@izvrs.si
Important documents directly related to the plan: Directive 2007/60/EC, Work plan to prepare FRMP	
Starting date : May 2007	Ending date: December 2015
Description of the plan: Preparation of national flood management plan to reduce flood risk in significant flood risk areas is based on assessment of flood risk areas, determination of significant flood risk areas and delineation of its flood risk maps. Based on evaluation of flood risks the proposal of measures – constructive and non - constructive will be prepared to reduce risk from floods on human health, economic activities, environment and cultural heritage. The final program of measures will be determined by cost-benefit analysis. The final Flood risk management plan will be, after public consultation and transboundary coordination adopted by the Slovenian Government. The basis of the plan is: EU Flood Directive (Directive 2007/60/EC) and national transposing legislation.	
Methodology used for assessment of FRM and climate change: The activities to prepare Flood risk management plan are defined by governmental decree and National program, signed by minister of the Environment. Some of the methodologies , such as flood risk assessment, flood hazard and flood risk mapping are defined by national legislation, while assessment of relevant meteorological and hydrological parameters indicating climate change are based on international methodologies agreed by WMO and European Centre for Medium-Range Weather Forecasts (ECMWF) .	

Plan title: 1. STRUCTURAL MEASURES TO REDUCE FLOOD RISK AT SOUTH -WEST PART OF LJUBLJANA CITY 2. STRUCTURAL MEASURES TO REDUCE FLOOD RISK AT IN CITY OF CELJE	
Responsible institution: Ministry of Environment and Spatial planning of the R of Slovenia	Contact institution/person: Ministry of Environment and Spatial planning of the R of Slovenia e-mail: gp.mop@gov.si Contact details such as e-mail, phone etc.
Important documents directly related to the plan: Flood risk management plan of the Republic of Slovenia (2015-2021)	
Starting date : 2009	Ending date: adoption planned by the end of 2011
Description of the plan: Ministry of Environment and Spatial planning, along with its responsibilities prepared the technical projects for the construction of dry retention areas to retain high peaks of flood waters at the areas with low damage potential to reduce flood risks at the urban areas of the city of Ljubljana and Celje as two most significant flood risk areas in Slovenia. According to the procedure, defined by building legislation, the projects are under public consultation. The adoption of the projects is expected at the end of the 2011, the beginning of the construction works in 2012. The plans are based on National environmental program, adopted by Parliament in 2009.	
Methodology used for assessment of FRM and climate change: flood risk mapping , as basis for planning the measures was following the methodology , defined by ministerial decree, hydrological data used for planning were revised , taking into account climate change.	

3.3.2 Croatia

Legislative document: ZAKON O VODAMA - WATER ACT, OG 153/09 http://narodne-novine.nn.hr/default.aspx
Relation to the other legislative documents: EU Water Directive 2000/60/EC and Flood Directive 2007/60/EC Framework Agreement on the Sava River Basin
Valid from : December, 2009
Short description: This Act regulates the legal status of water, water goods and water structures, water quality and quantity management, protection from flooding, a detailed land-improvement drainage and irrigation activities of the public water supply and public sewage system, special activities of water management, institutional structure to carry out such activities and other issues related to water and water resources. Among all objectives related to water management which are set in this law the most important goal is: "Protecting people and their property from floods and other adverse effects of water." Water Act sets up climate change adaptation as one of the most important principles of water management. It also establishes the following principles of the FRM: solidarity, priority in needs, emergency services, permanent immobilization and mobilization, planned and coordinated at the level of the river basin in order to reduce the risk of adverse consequences of flooding, especially in the life, health and property, the environment, cultural heritage, economic activity and infrastructure. The Law also provides public participation during the process of adoption of legal acts, planning documents and regulations regarding to the FRM. It also establishes the principle of transboundary water management. Specifically, the law stipulates that the transboundary management should be facilitated by the conclusion and implementation of international agreements, notification and exchange of information on water, etc. The Act defines the purpose of water resources, and particular in terms of the FRM Act regulates the construction and maintenance of structures for regulation and flood control. It also regulates the implementation of flood protection. Types of water structures interesting in the context of FRM are defined in this Act. These are the regulatory and protective water structures which include: levees, revetments, artificial waterbed, drainage canals, lateral canals, drainage tunnels, dams with reservoirs, dams, retention and other related buildings, pumping stations, flood control, dams, waterfalls, buildings for protection against erosion and floods, and other buildings accompanying these structures. The law covers protection from the harmful effects of water which includes activities and measures to flood control. The above mentioned is of paramount interest to this project. Managing the risks from harmful water actions include: a preliminary assessment of flood risk, development and implementation of flood risk management plans and National plan of flood control, logistics and implementation plans related to this plan, water resources regulation, the implementation of the ordinary and extraordinary flood protection. For each river basin, if necessary for its part, law prescribes the mandatory preliminary flood risk assessment carried out by Croatian Waters. According to the Low preliminary flood risk assessment carried out by Croatian Waters should include: <ul style="list-style-type: none">- Map (maps) of the river basins in the appropriate scale, with borders of river sub-basins showing topography and land use;- Description of floods in the past that have had significant adverse effects on human health, environment, cultural heritage and economic activity and the likelihood of similar events in the future, which could lead to similar adverse consequences;- Assessment of potential adverse consequences of future floods to human health, environment, cultural heritage and economic activity, taking into account, as much as possible, topographic, general hydrologic and geomorphic features and location of watercourses, including floodplains and including floodplains as natural retention areas , the efficiency of existing buildings for flood control, the position of populated areas, location of industrial zones, plans for long-term development and climate change on the occurrence of floods. In addition, the law stipulates the obligation to Croatian waters of making flood hazard maps and flood risk maps for catchment area and, if needed, for parts of the river basin and sub-basins. Flood hazard

maps (maps) must contain a representation of possibilities for the development of certain flood scenarios. Flood risk maps have to contain a representation of the possible adverse consequences of events that may occur under those scenarios. On the basis of flood hazard maps and flood risk maps Croatian Waters delivers plans for flood risk management. These plans include: objectives for flood risk management; measures to achieve these goals, including preventive measures; protection, preparedness, flood forecasting and systems for public informing and warning. Flood risk management plan is an integral part of the River Basin Management Plan. Regard to the preparation of the FRM the Law provides next two provisions: 1st For the purpose of the Operational FRM Croatian government adopts National plan of flood protection and 2nd Flood protection is implemented by river basins, protected areas, sectors and sections. This Law also defines the flood protection measures and content of the National plan of flood protection.

Legislative document: ZAKON O FINANCIRANJU VODNOG GOSPODARSTVA - WATER MANAGEMENT FINANCING ACT, OG 153/09 <http://narodne-novine.nn.hr/default.aspx>

Relation to the other legislative documents:

WATER ACT and WATER MANAGEMENT STRATEGY – Croatia
EU Water Directive 2000/60/EC and Flood Directive 2007/60/EC

Valid from : 2009

Short description:

This Act establishes the sources of funding for water management. In particular, it relates to water charges, including: the obligation to pay, taxpayers, the tax base, the method of calculation, determining the amount, purpose of spending those funds, enforcement, statute of limitations and other issues related to ensuring and use of these funds. Prices of water services are regulated by the Water Act.

Financing of Water Management in Croatia is based on the following principles:

1. Resources for financing water management are provided from water charges. The users of the water system and water polluters pay water charges from the price of water services in accordance with the Water Act and other assets established by this Act;
2. Funds raised from water charges may be used only for purposes specified in this Act;
3. Funds raised from water charges are used jointly among all users and in accordance with priorities established in the whole country (Croatia), the water district, in the local (regional) governments, water supply areas, agglomeration and the service area, except in cases when this Act provides otherwise;
4. Water has its economic value. Water value includes expenditure necessary to ensure its availability and security as well as for the construction, operation and maintenance of water systems. The price of water must be present for all of these values.

Return of these expenditures is provided from two sources. The first relates to the payment of the price of water services in water supply areas, agglomeration or service area according to the Water Act, development charges and connection fees.

Second source from the payment of two fees: fees for water use and charges for water protection in Croatian territory (principle of full cost recovery);

5. Funds from the fees for water use and the fees for water protection are irretrievably assigned to suppliers of water services for co-financing or construction of municipal water structures. Users of water services can not be further burdened by the cost of construction of these buildings to the extent that they were financed from fees for water use and the fees for water protection;
6. Funds from the fees for water protection can be granted to persons who discharge waste water from technological process, to enable co-financing or the financing of the construction of water structures for the treatment of waste waters. These funds can be granted to persons discharging sanitary waste waters, but which can not be connected to public sewerage system, in order to co-finance or finance of water structures for treatment of sanitary waste waters. If these structures owned by the Republic of Croatia, or these structures are owned by legal entities in which the Republic of Croatia, directly or indirectly holds a majority of shares or is in title to make decisions, the funds are awarded irretrievably as provided in the preceding paragraph (5), if it is not the case the funds are awarded as loans.

It can be concluded that there are several different sources of funds for financing water management in Croatia:

- water fees,
- price of water services,
- State budget
- budgets of local and / or district (regional) governments and
- other sources.

Legislative document: PRAVILNIK O GRANICAMA PODRUČJA PODSLIVOVA, MALIH SLIVOVA I SEKTORA
- RULEBOOK ON BOUNDARIES OF SUB-BASINS, SMALL BASINS AND SECTORS, OG 97/10
<http://narodne-novine.nn.hr/default.aspx>

Relation to the other legislative documents:

WATER ACT – Croatia

Valid from : 2010

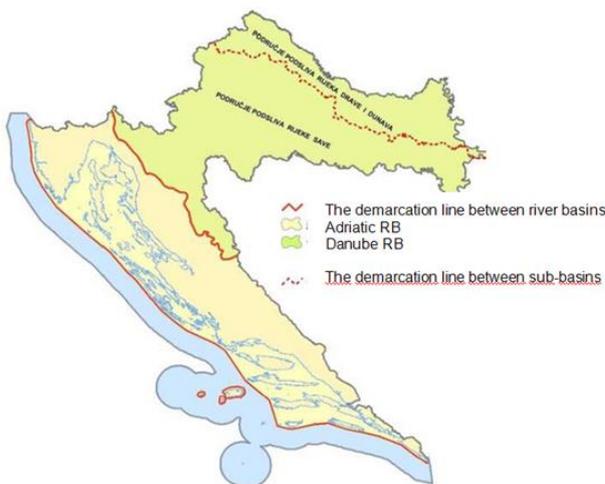
Short description:

The subject Rulebook defines the boundaries of a sub-basin, small basins and sectors in the Republic of Croatia as follows:

- Sub-basins are territorial units for conducting activities of planning and reporting within water management according to international river commissions on the Danube River Basin;
- Small basin is the basic territorial unit for carrying out operational work in water management;
- The sector represents more neighbouring small basins with a unique water management due to their association on water issues. This applies particularly to the implementation of flood protection.

Within the Danube river basin are determined Sava river sub-basin and Drava and Danube river sub-basin. The demarcation line between these sub-basins is the natural watershed of the Sava River sub-basin and the Drava and Danube river sub-basin. The above applies to surface water and groundwater. This watershed was determined based on the results of hydrological and hydrogeological research and charted on the cartographic representation that follows. Other sub-basins boundaries correspond to boundaries of the Danube river basin.

This Rulebook also identified 34 small basins on the Croatian territory. Land boundaries of these small basins with other countries are state borders. Maritime boundaries of small basins are defined by the provisions of the Water Act.



Source: RULEBOOK ON BOUNDARIES OF SUB-BASINS, SMALL BASINS AND SECTORS NN br. 97/10

Cartographic representation of the boundaries of river basins and sub-basins in Croatia.



Source: RULEBOOK ON BOUNDARIES OF SUB-BASINS, SMALL BASINS AND SECTORS NN br. 97/10

Cartographic representation of the boundaries of small river basins and sector in Croatia

Rulebook provides a list of local and regional authorities that belong to some of the small basins. Six sectors (which are labelled A to F) are determined on the Croatian territory.

Legislative document: PRAVILNIK O SADRŽAJU, POSTUPKU I METODOLOGIJI DONOŠENJA STRATEGIJE UPRAVLJANJA VODAMA I PLANA UPRAVLJANJA VODNIM PODRUČJIMA, NAČINU KONZULTIRANJA I INFORMIRANJA JAVNOSTI I SASTAVU SAVJETA VODNOG PODRUČJA - RULEBOOK ON THE CONTENT, PROCESS AND METHODOLOGY FOR ADOPTION OF THE WATER STRATEGY AND RIVER BASIN MANAGEMENT PLAN, METHOD OF CONSULTATION AND PUBLIC INFORMATION AND COMPOSITION OF RIVER BASIN COUNCIL, OG 3/11, <http://narodne-novine.nn.hr/default.aspx>

Relation to the other legislative documents:

WATER ACT and WATER MANAGEMENT STRATEGY – Croatia;
EU Water Directive 2000/60/EC, Flood Directive 2007/60/EC

Valid from : 2009

Short description:

This Rulebook regulates content, process and methodology for adoption of the Water Management Strategy (WMS) and River Basin Management Plan (RBMP), method of public consultation and public information and composition of River Basin Councils. WMS according to this Rulebook shall contain:

- basic principles and starting points (general information, basic guidelines for water management),
- the state of water and water resources,
- the state of water systems - provides an overview of current status and functioning,
- financing of operations and activities in water management,
- objectives and guidelines for the implementation of water management goals,
- development plans,
- strategic guidelines and priorities,
- implementation.

RBMP according to provisions of this Rulebook and Water Act shall contain:

- administrative arrangements,
- description of natural features and water status,
- review of significant pressures and impacts of human activities on state waters,
- presentation of protected areas - areas with special protection of waters,
- monitoring of water bodies of surface water and groundwater,
- economic analysis,
- the objectives of protection of the water environment,
- a program of measures to achieve goals,
- funding and
- summary of the procedure of informing and consulting the public and of the results.

Programme of work on developing these planning documents must contain:

- objectives and legal basis,
- timetable for drafting the planning document and
- program of consultation and public information.

The program must be approved by the responsible Minister and produced by Croatian Waters.

In the implementation of consultation activities and public information is necessary to:

- publish on the web-sites: a timetable, program development plan and a list of consultations, addresses and deadlines for submission of written proposals and views, the interim overview of significant water management issues identified in the basin, the draft planning document, information about the possibility of insight into the draft plan, the deadline for submission written proposals and opinions about the plan,
- perform at least two rounds of public consultation on significant water management issues and on draft Plan by organizing public discussions.

River Basin Council is appointed by the minister responsible for water management at the proposal of the body / institution (counties, cities, municipalities, water concessionaires, industrial pollutants, suppliers of water services, water management companies, farmers, NGOs). Two members shall be appointed from scientific and / or professional institutions. The Council has at least 24 and no more than 26 members and discuss the draft plan, provides recommendations and opinions on the draft Plan and amendments or changes to the plan.

Legislative document: ODLUKA O OSNIVANJU NACIONALNOG POVJERENSTVA ZA PROMJENU KLIME - DECISION ON THE ESTABLISHMENT OF A NATIONAL COMMISSION ON CLIMATE CHANGE, OG 164/98
<http://narodne-novine.nn.hr/default.aspx>

Relation to the other legislative documents:

LAW ON RATIFICATION OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

Valid from : 1998

Short description:

This Decision establishes the National Commission on Climate Change.

The main task of the Commission is monitoring all activities during the implementation of the project, which will produce the first National Report on Climate Change. The report should be made in accordance with the provisions of the Law on Ratification of the United Nations Framework Convention on Climate Change.

Commission which was appointed by this decision has 17 members.

Legislative document: ODLUKA O GRANICAMA VODNIH PODRUČJA - THE DECISION ON THE BOUNDARIES OF RIVER BASIN, OG 79/10
<http://narodne-novine.nn.hr/default.aspx>

Relation to the other legislative documents:

WATER ACT – Croatia

Valid from : 2010

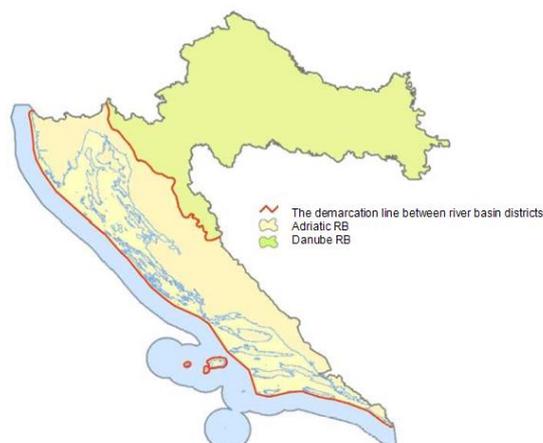
Short description:

This decision establishes the boundaries of river basin (RB) in the Republic of Croatia.

Danube RB covers part of the Croatian mainland, from which all waters, surface or groundwater, drains into the Danube River.

Adriatic river basin covers part of the Croatian mainland, including islands, from which all waters, surface or groundwater, drain into the Adriatic Sea, the corresponding transitional waters and coastal waters only in terms of their chemical and ecological status.

The demarcation line between the Danube River Basin and the Adriatic River Basin is a natural watershed of the basins and relates to surface water and groundwater. This watershed was determined based on the results of hydrological and hydrogeological research and charted on the cartographic representation that is an integral part of this Decision (cartographic representation below).



Source: THE DECISION ON THE BOUNDARIES OF RIVER BASIN NN 79/10
Cartographic layout of boundaries of river basins in Croatia

Legislative document: ODLUKA O POPISU VODA 1. REDA - THE DECISION ON INVENTORY OF FIRST ORDER WATERS, OG 79/10
<http://narodne-novine.nn.hr/default.aspx>

Relation to the other legislative documents:

WATER ACT – Croatia

Valid from : 2010

Short description:

This Decision establishes a inventory of first order waters including: interstate waters, coastal waters, other major waters and water channels as well as torrential waters of higher power.

All waters defined by the provisions of the Water Act, which has a catchment area greater than 50 km², or the length of the watercourses greater than 20 km are classified as interstate waters. These are:

- waterways
- artificial water bodies
- natural lakes
- accumulation and retention

The major water and channels that exist in Croatia are:

- a) watercourses - all waters with catchment area greater than 200 km² or length greater than 20 km are classified into watercourses,
- b) channels - all artificial water bodies of greater importance for flood protection and irrigation are classified into channels,
- c) lost rivers - all waters of greater importance for karst drainage fields are classified as groundwater or underground rivers,
- d) natural lakes - all lakes in volume greater than 100,000 m³ are classified into natural lakes,
- e) accumulation and retention - water of major significance for flood protection, irrigation, or a those with volume greater than 500,000 m³ are classified as accumulation and retention,
- f) transitional waters - all waters defined by the provisions of the Water Act are classified as the interim waters.

All waters that determines the catchment area greater than 50 km², or the length of continuous or intermittent watercourses is greater than 20 km or determine flows of strong erosion processes that threaten the larger settlements, industrial plants, highways and regional roads and structures for melioration are classified within torrential waters of higher power.

Strategy document: STRATEGIJA UPRAVLJANJA VODAMA - WATER MANAGEMENT STRATEGY (WMS),
OG 91/08 <http://narodne-novine.nn.hr/default.aspx>

Responsible institution: Hrvatske vode (Croatian waters) and Croatian Parliament

Starting date of the implementation: 2008.

Contact institution/person:

Hrvatske vode (Croatian Waters), Ulica grada Vukovara 220, 10000 Zagreb, <http://www.voda.hr>

Croatian Parliament, Trg sv. Marka 6, 10 000 Zagreb, www.sabor.hr

Important documents directly related to the strategy: Water Act – Cro, Flood Directive 2007/60/EC

Description of the strategy:

The strategy is roof state-level Water Management document in Croatia. It defines the legislative, organizational, financial, technical, scientific and IT aspects of flood risk management activities in the present socio-economic circumstances of the accession process of the Republic of Croatia to the European Union, as well as in the future circumstances of full membership.

WMS determines the targets for effective flood protection. Large towns are first order priority for the flood protection in SRB and then other settlements along the SR. Reconstruction of dykes and further construction of the Central Posavina flood protection system are foreseen. The goal for flood protection on the waters of I. and II. order (reaching a system functionality to a level of about 87% by the end of 2023 up to 100% by the end of 2038, the current state of functionality is 75%) is set on the basis of conducted analysis. This means that half of the planned works will be completed by 2023, and the other half by 2038. The goal will be achieved through the gradual implementation of the works on rehabilitation and reconstruction of structures and through the implementation of development projects.

Maintenance of the protective systems on the waters of I. and II. order will be implemented by Croatian Waters. Maintenance of detailed canal network for drainage and irrigation will be implemented by the Counties from 2009.

Methodology proposed for assessment of FRM and climate change:

FRM is based on the principle of sustainable development, which includes integrated water management.

To implement the FRM in a quality manner the following measures are defined as follows:

Administrative measures: Preparation, adoption and regularly amending of The National Flood Protection Plan. The introduction of the principles of ensuring the uncovered risk of flood damage through insurance policies. Development of flood risk maps and flood damage maps for the whole country as well as their presentation to the interested public. The introduction of appropriate indicators and systematic monitoring of the effectiveness of the measures for protection against flooding. FRM to unarranged inundations and large lowland retention system for flood protection will be resolved by the means of zoning of floodplains and with introduction of graduated restrictions on land use.

Building (structural) measures: Routine maintenance of watercourses, water resources and water works; systematically conducting of technical monitoring of key water structures (defensive embankments, dams, floodgates and pumping stations). Achieving the functionality of flood protection by 2023 by 87% and achieving 100% of functionality to the year 2038 by providing the necessary capital investments. Encouraging and solving of problems related to flood control within the planned multi-purpose systems related to regulation of use of both water and land.

Non-structural flood protection: Implementation of the operational flood protection. Management and coordination of the systems related with the water structures of accumulation and distribution and related facilities during the periods of high waters. The introduction of re-naturalization measures of preventive flood protection. Maximum flows of floodplain waves, especially on small and medium-sized basins should be reduced partly by preserving and improving natural retention capacities, watercourses and floodplains. The implementation of such measures partly reduces the risks from extreme flooding. In order to improve the FRM it is necessary to modernize existing systems for monitoring and forecasting of hydrometeorological phenomena (automatic measuring stations, radars, satellite imaging, forecasting models and similar), and existing communication systems to facilitate the availability of measured data to responsible authorities in real time. Flood forecasting models should be developed, formally adopted and regularly updated. Population should be promptly informed of the actions that are related to the FRM.

Plan title: DRŽAVNI PLAN OBRANE OD POPLAVA - NATIONAL PLAN FOR FLOOD PROTECTION, OG 84/10
<http://narodne-novine.nn.hr/default.aspx>

Responsible institution:
Croatian Government - Ministry of Regional
Development, Forestry and Water Management

Hrvatske vode (Croatian waters)

Contact institution/person:
Trg kralja Petra Krešimira IV br. 1, 10 000 Zagreb
<http://www.mrrsvg.hr>

Ulica grada Vukovara 220, 10000 Zagreb,
<http://www.voda.hr>

Important documents directly related to the plan:
Water Act - Croatia

Starting date :
2010

Ending date:
Remains in force

Description of the plan:

For operational flood risk management Croatian government adopts National plan for flood protection, which regulates:

- territorial units for flood protection (catchment areas, sectors, protected areas, and sections),
- levels of flood protection (preventive, regular and extraordinary),
- flood protection measures, including preventive measures,
- institutions and bodies in charge for flood protection,
- management of flood protection and the rights and obligations of flood protection managers.
- content of implementation plans for flood protection,
- development and content of logistics plans in a case of flooding, which determine measures of sheltering and rescuing, emergency operation and other essential services in flood conditions, water supply, food, etc.,
- a system for informing and warning, and communication system.

Flood protection measures established by National plan for flood protection consider:

- planning, study analysis and monitoring of water regimes,
- water regulation,
- preparatory work on prevention,
- immediate measures of regular and extraordinary flood protection,
- actions that follow regular flood protection.

This plan establishes an International Water Management Commission as a mechanism for harmonization of policies for flood protection in international waters with other countries that are interested in the issues concerned. Harmonization of these policies should be pursued through the Ministry responsible for water management. Implementation of flood control measures in international waters executes a legal entity for water management - Croatian Waters. Croatian Waters are responsible for planning, organizing, financing and implementation of flood protection to all waters in Croatia.

Plans for the protection and rescue are set up as relevant in the case of large scale flooding. These plans provide operational and logistical support to forces of Croatian Waters. Plans for the protection and rescue are also defined by this Plan.

The Plan defines the use of the resources required for implementation of both information and warning systems. It stipulates the obligations of the Croatian Waters in maintaining and adjusting the communication and information systems to the needs of the main centre for flood protection. In addition, Croatian Waters need to connect these systems with systems of other competent bodies and institutions.

Methodology used for assessment of FRM and climate change:

National plan for flood protection points to the organizational objectives of flood risk management. It also states that those objectives must be regulated according provisions of existing plans for flood risk management, and in accordance with the provisions of the Water Act.

National Meteorological and Hydrological Service is defined as a competent institution for collection and processing of hydrometeorological data. Preparation of forecasts and warnings for the purposes of flood

protection is also obligation of the MHS.

To ensure effective connectivity of national flood protection notification and warning systems with other similar systems the plan established the obligation for Croatia to create a protocol on exchange of data and information related to flood protection. This includes exchange of information required for FRM. The protocol must be related to the exchange of data and information between different institutions within the Croatia and between Croatia and other countries in the areas of their common interests. If this exchange takes place at the international level is necessary to establish an international agreement.

Legislative document: GLAVNI PROVEDBENI PLAN OBRANE OD POPLAVA - HRVATSKA

THE MAIN IMPLEMENTING FLOOD PROTECTION PLAN – CROATIA

www.voda.hr/lgs.axd?t=16&id=3030

Relation to the other legislative documents:

NATIONAL PLAN FOR FLOOD PROTECTION - Croatia

Valid from : 2011

Short description:

Main Implementing Flood Protection Plan (MIFPP) is in accordance with the provisions of National Plan for Flood Protection and it defines the technical and other elements necessary for the management of ordinary and extraordinary protection against flooding for waters of I. order.

MIFPP provides:

- Overview of territorial units for the direct implementation of flood protection (including the number and designation of sections and other necessary data) by sectors and an overview of the related structures for flood protection on which flood protection measures are being implemented as well as measures of protection against the ice on watercourses. Furthermore, it provides an overview of the water levels at which a preparatory state for particular watercourse section begins, with, regular or an extraordinary state of flood prevention, as well as with the state of emergency.
- Allocation (by the territorial units) of flood managers and their deputies, as well as legal entities and their officers and deputies registered for the implementation of flood protection, or protection from ice to watercourses.
- Obligations of the Croatian Meteorological and Hydrological Service (Državni hidrometeorološki zavod) in collecting and providing data, forecasts and warnings of hydrometeorological phenomena of importance for flood protection.
- Instructions for preparation of reports on implemented measures of flood protection.
- Criteria for the protection from the ice on watercourses.
- Maps of the sectors and protected areas.

Plan title: VIŠEGODIŠNJI PROGRAM GRADNJE REGULACIJSKIH I ZAŠTITNIH VODNIH GRAĐEVINA I GRAĐEVINA ZA MELIORACIJE 2011-2015 - MULTIANNUAL PROGRAM OF BUILDING REGULATION AND PROTECTION STRUCTURES AND STRUCTURES FOR MELIORATION 2011-2015 www.voda.hr/lgs.axd?t=16&id=2617	
Responsible institution: Hrvatske vode (Croatian waters)	Contact institution/person: Ulica grada Vukovara 220, 10000 Zagreb, http://www.voda.hr
Important documents directly related to the plan: Water Act – Croatia, Water Management Strategy - Croatia	
Starting date : 2011	Ending date: 2015
Description of the plan: Multi-year program of building regulation and protection structures and structures for basic amelioration drainage is a operational implementation program of water management within activities of regulation of watercourses and other waters and protection against harmful water effects. Development of this program is prescribed in Article 37 of Water Act ("Official Gazette" no. 153/09), and it determine: individual projects, ways and periods of their implementation, participants in the implementation, values of investments and sources of funds, priority in the implementation and methodology for evaluation of projects using multi-criteria analysis with a weighting coefficient, program monitoring, the risks for the program implementation, and professional capacity required for its implementation. The program will operationalize a system that will implement it in a way that will contribute to more effective use of available financial, personnel and information-documentation resources within water management activities related to regulation of watercourses and other waters and protection against harmful water effects. The law stipulates that a multi-year programs of building regulation and protection structures and structures for basic amelioration drainage must be made in accordance with the Water Management Strategy and the River Basin Management Plan, and after 2015. year in accordance with the plan of flood risk management in the part relating to investments in systems to protect from harmful water effects. This ensures a gradual harmonization of operational programs with the strategic orientation of the water management adopted at the national level and with the adopted standards of the European Union in the field of water policy, particularly those of the Water Framework Directive and the Directive on the assessment and management of flood risks. Full compliance of planning documents on regulation of watercourses and other waters and protection against harmful water effects with abovementioned documents is expected after the adoption of a Flood Risk Management Plan in 2015. Prior to development of the Program was performed the initial identification of previously planned individual projects related to water regulation and to protection against harmful water effects. The identification includes gathering of basic technical data and information on these projects, projects costs estimations, and assessment of the readiness of individual projects for implementation. This was followed by determination of the priorities whose implementation will increase the level of flood protection to the insufficiently protected areas where can be expected great material damage, casualties and damaging effects of floods on the environment and human health. Generally, these are insufficiently protected areas of towns and larger settlements. Finally, a proposal of priority projects was created. This proposal was developed on the basis of established criteria to assess the significance and character of individual projects and their impact on increasing of the security level of the population and property, the environment, as well as the level of project readiness for implementation. The Program is a key document for the establishment and implementation of capital projects related to protection against harmful water effects, and its list of priority projects will be modified, amended and verified every two years, and significantly revised every six years, especially after the adoption of a Flood Risk Management plan in 2015. The Program will be implemented by Croatian Waters, due to their experience and references to the implementation of various projects funded by national and international sources. This way its successful completion will be ensured.	
Methodology used for assessment of FRM and climate change: N/A	

Plan title: AKCIJSKI PLAN PRIPREME I DONOŠENJA PLANA UPRAVLJANJA VODNIM PODRUČJIMA - ACTION PLAN FOR PREPARATION AND ADOPTION OF RBMP

http://www.mrrsvg.hr/UserDocImages/Akcijski%20plan%20izrade%20RBM%20Planova%2030072010_hrv_14.00.pdf

Responsible institution:

Croatian Government - Ministry of Regional Development, Forestry and Water Management

Contact institution/person:

Trg kralja Petra Krešimira IV br. 1, 10 000 Zagreb
<http://www.mrrsvg.hr>

Important documents directly related to the plan:

WATER ACT – Croatia
WATER MANAGEMENT STRATEGY – Croatia
EU Water Directive 2000/60/EC
Flood Directive 2007/60/EC

Starting date : 2010

Ending date: 2011

Description of the plan:

Plan is based on description of activities related to FRM and on their time-line, key deadlines of this Action Plan are as follows:

- (1 August 2010) - Ministry of Regional Development, Forestry and Water Management (MRDFWM) has published on its website action plan of preparation and adoption of the Plan.
- (November 30, 2010) - Croatian Government has adopted two decisions: 1st Decision on accepting the draft Plan and 2nd Decision about start of a public discussion.
- (December 1, 2010 - May 31, 2011) - Public consultation on the draft plan with all stakeholders related to water (the central, regional and local authorities, institutions, water users, NGOs and the general public).
- (November 30, 2011) - Croatian Government will bring RBMP for Danube River Basin region (Sava River BMP will be included) and Adriatic River Basin.

Methodology used for assessment of FRM and climate change:

- This Action Plan is a short but comprehensible description of the methodologies used for establishing RBMP. The methodology for establishing RBMP is expressed by a series of activities.
- Activities related to the preparation of FRMP should be conducted in parallel with activities from the Action Plan with respect to climate change.

Plan title: PLAN IZRADE AKATA PREMA ČLANKU 249. ZAKONA O VODAMA S OKVIRNIM PLANOM IZRADE PRVOG PLANA UPRAVLJANJA VODNIM PODRUČJIMA - PLAN FOR THE DEVELOPMENT OF ACTS UNDER ARTICLE 249 OF WATER ACT WITH THE FRAMEWORK PLAN OF THE FIRST RIVER BASIN MANAGEMENT PLAN
<http://www.voda.hr/Default.aspx?sec=261>

Responsible institution:
 Hrvatske vode (Croatian Waters)

Contact institution/person:
 Hrvatske vode (Croatian waters), Ulica grada Vukovara 220, 10000 Zagreb, <http://www.voda.hr>

Important documents directly related to the plan:

WATER ACT – Croatia
 WATER MANAGEMENT STRATEGY – Croatia
 EU Water Directive 2000/60/EC
 Flood Directive 2007/60/EC

Starting date : 2010

Ending date: 2015

Description of the plan:

This plan is twofold. The first part of this planning document deals with harmonization of legislation, while the second deals with setting a framework for development of the first RBMP in Croatia.

Croatian Waters announced a plan for the development of the following documents related to FRM:

- Previous assessment of flood risk in each river basin, and if necessary, for its part according to Article 110., Paragraph 1. of the Water Act;
- Flood hazard maps and flood risk maps for each river basin, and if necessary, and for its parts according to Article 111., Paragraph 1. of the Water Act,
- FRMP for each river basin, and if necessary, for its part on the basis of pre-made flood hazard maps and flood risk maps, which are an integral part of river basin management plan under Article 112., of the Water Act.

The timetable and work program to develop RBMP can not be made before the minister edit further regulations:

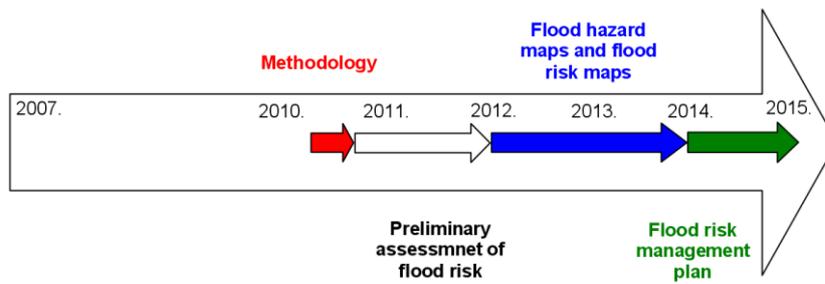
- Content, procedure and methodology for adoption of RBMP,
- The methods for consultation and informing the public about the draft RBMP,
- Rules on RB councils (calls for meetings, decision making).

Therefore, for the purposes of preparation of Plan for the Development of Acts Under Article 249 of Water Act The Framework Plan of the First River Basin Management Plan is developed.

Methodology used for assessment of FRM and climate change:

Planned time-line for the preparation of documents under Articles 110., 111., and 112. of the Water Act related to the implementation of the Flood Directive 2007/60/EC on the assessment and management of flood risks, is following:

- a preliminary flood risk assessment shall be completed by the end of 2011.,
- flood hazard maps and flood risk by the end of 2013.,
- flood risk management plans by 2015.



Preparation of flood risk management plans will be coordinated with the preparation of the second RBMP by Croatian Waters which is planned to be completed by the end of 2015.

3.3.3 BiH

Legislative document: ZAKON O VODAMA FEDERACIJE BOSNE I HERCEGOVINE I ZAKON O VODAMA REPUBLIKE SRPSKE - WATER ACT OF FEDERATION BiH, OG 70/06 AND WATER ACT OF REPUBLIC OF SRPSKA, OG 50/06 <http://www.sluzbenilist.ba/lzborlzdanjaFBiH.aspx?mi=983>
<http://www.slglasnik.org/>

Relation to the other legislative documents:

1 Upper level:

EU Water Directive 2000/60/EC

Flood Directive 2007/60/EC

2. Lower level:

Decree on types and content for flood protection plans

Rulebook on establishment of water resources information system

Valid from : 2006

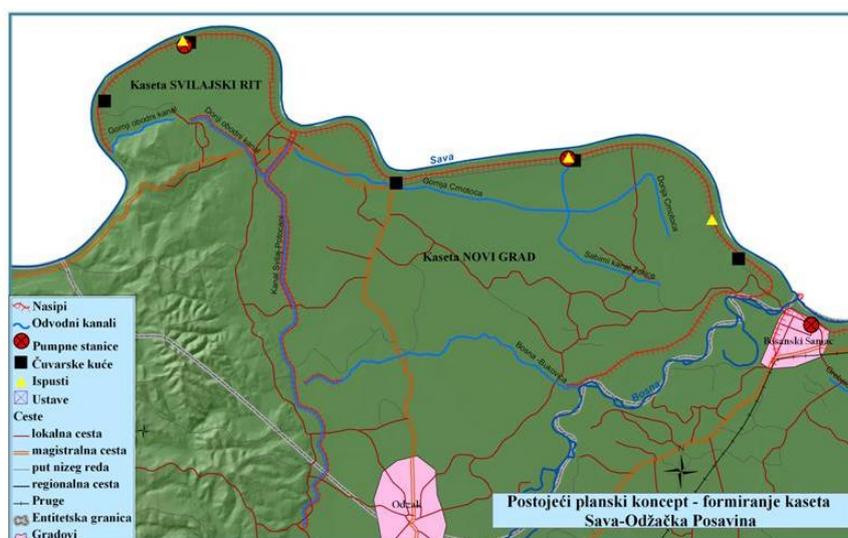
Short description:

Water Act of Federation of BiH (same as in the Republic of Srpska) in article 86 regulates issue of endangered areas in following way:

- (1) In order to lower degree of endangering people, goods and to implement flood protection measures and activities areas are endangered by the following:
 1. floods (floodprone areas),
 2. erosion caused by surface water (erosive areas).
- (2) The abovementioned areas (endangered areas) are defined by Government of the Federation BiH taking into consideration natural conditions that may cause damage, number of potential endangered people, the extent of potential damage on land, structures and other goods.
- (3) In order to protect the land and considering degree of endangering, land could be categorised.
- (4) The Federal Minister declares an act on procedures for determination the degree of endangering and on categorisation.

The Federal Government also declares an act on types and content of the abovementioned plans.

The abovementioned directly concerns Sava floodprone areas because the most of endangered areas in BiH are in these zones (Odžačka Posavina and Srednja Posavina). Therefore, for these areas separate plans have been made. Some of them are shown on the figures below.



This Decree is fully in a line with Flood Directive 2007/60/EC.

Legislative document: UREDBA O VRSTAMA I SADRŽAJU PLANOVA ZAŠTITE OD ŠTETNOG DJELOVANJA VODA - REGULATION ON THE TYPES AND CONTENTS OF THE PLANS FOR PROTECTION AGAINST HARMFUL EFFECTS OF WATER OF FEDERATION BiH
<http://www.voda.ba/loc/?p=70>

Relation to the other legislative documents:

WATER ACT OF FEDERATION BiH, FEDERAL OPERATIVE FLOOD PROTECTION PLAN, OG 7/11
EU Water Directive 2000/60/EC
EU Flood Directive 2007/60/EC

Valid from : 2009

Short description:

This regulation establishes:

- types, content and method of preparation,
- a process of harmonization, adoption, updating and maintaining plans for protection against harmful effects of water in Federation BiH.

Plans of this Regulation is divided into:

- flood risk management plans,
- plans for active protection against floods and ice.

This Regulation establishes a framework for preliminary flood risk assessment and management in order to reduce the harmful consequences caused by water in the FBiH to human health, environment, cultural heritage and economic activity. The establishment of abovementioned framework is regulated through the implementation of the following:

- Preliminary flood risk assessment for each river basin district within the territory of the Federation;
- Flood hazard maps and flood risk maps at the level of the river basin;
- Flood risk management plans based on the above mentioned maps;
- Compliance of flood risk management plans with water management plans as well with information and public participation;
- Preparation and adoption of flood risk management plans.

This Regulation is fully in a line with Flood Directive 2007/60/EC.

<p>Strategy document: STRATEGIJA UPRAVLJANJA VODAMA FEDERACIJE Bosne I Hercegovine 2010-2022 (PRIJEDLOG) - WATER MANAGEMENT STRATEGY IN FEDERATION BiH 2010-2022 (proposal) (Preparation of the water management strategy is also an ongoing process in BiH-RS) http://www.voda.ba/doc/SUV_FBiH_Prijedlog.pdf http://www.voda.ba/doc/Sazetak_nacrta_zavrsnog_izvjestaja.pdf</p>	
<p>Responsible institution: Ministry of Water Management in entities through Agencies for Water Resources – Sava River</p>	
<p>Starting date of the implementation: The Strategy is under ratification process in FBiH</p>	<p>Contact institution/person: Agency for Water Resources of Sava River Basin Sarajevo Agencija za vodno područje rijeke Save, Sarajevo/Nazifović Mirsad +387 33 565425</p>
<p>Important documents directly related to the strategy:</p>	
<p>Description of the strategy: The Strategy systematically describes available water resources in Federation BiH, their time and spatial distribution, quality and quantity, adjustment to the needs of water users. The accompanied legal, institutional, financial, human resources and other issues are also considered.</p>	
<p>Methodology proposed for assessment of FRM and climate change:</p>	

<p>Plan title: GLAVNI PLAN OPERATIVNIH MJERA ODBRANE OD POPLAVA - FEDERAL OPERATIVE FLOOD PROTECTION PLAN, OG 7/11 http://www.voda.ba/udoc/Federalnioperativniplanodbraneodpoplav.pdf</p>	
<p>Responsible institution: Agency for Water Resources of Sava River Basin, Sarajevo (for the River Basin in FBiH) and Agency for Water Resources of regional Sava River Basin Bjeljina (for the River Basin in the BiH - RS)</p>	<p>Contact institution/person: www.voda.ba and www.voders.org</p>
<p>Important documents directly related to the plan:</p>	
<p>Starting date : 2011</p>	<p>Ending date: -</p>
<p>Description of the plan: This Plan is implementation of the main Plan for Flood Protection in Federation BiH and mainly defines operative activities of implementation of flood protection and related financing issues.</p>	
<p>Methodology used for assessment of FRM and climate change: Same as in Flood Protection Plan.</p>	

3.3.4 Serbia

Legislative document: ZAKON O VODAMA - WATER ACT, OG 30/10 http://www.mpt.gov.rs/postavljen/123/893-10.pdf
Relation to the other legislative documents: EU Water Directive 2000/60/EC and Flood Directive 2007/60/EC
Valid from : 2010
Short description: This Law regulates the legal status of waters, integrated water management, the management of water structures and water land, the method and sources of funding of water sector activities, oversight of the implementation of this Law, and other matters of importance to water management. The provisions of the Law apply to all surface waters and groundwaters within the territory of the Republic of Serbia, including the Sava river basin. The law is the coordinated with the Floods Directive 2007/60/EC and the Water Framework Directive 2000/60/EC (WFD). The three step-approach of the Floods directive (preliminary risk assessment, flood risk maps, flood risk management plans) is ensured by provisions of Art. 47-51. The flood risk management plans per Article 49 of this Law shall be delivered by the year 2017. The timetable of the interim steps (preliminary risk assessment, preparation of flood hazard and flood risk maps) is not set in the Law. The Minister shall prescribe due methodologies, and these will be published as: <ul style="list-style-type: none">- Rulebook on the Establishment of a Methodology for the Preparation of a Preliminary Flood Risk Assessment,- Rulebook on the Establishment of a Methodology for the Preparation of Flood Hazard Maps and Flood Risk Maps,- Rulebook on the Establishment of a Methodology for the Preparation of Flood Risk Management Plan.

Legislative document: PRAVILNIK O METODOLOGIJI ZA PRELIMINARNU PROCENU RIZIKA OD POPLAVA NA TERITORIJI REPUBLIKE SRBIJE - RULEBOOK ON THE ESTABLISHMENT OF A METHODOLOGY FOR THE PREPARATION OF A PRELIMINARY FLOOD RISK ASSESSMENT – not issued

Relation to the other legislative documents:

Law on water, Serbia

EU Water Directive 2000/60/EC and Flood Directive 2007/60/EC

Valid from : in preparation

Short description:

PFRA includes the assessment of the potential risk of river flooding and internal floods. PFRA is based on collected geospatial data.

Significant historical floods are identified on the basis of collected data and include:

- flood that induced large scale damage, according to the valid methodology for assessing damage from natural disasters, or

- flooding with at least one of the following effects: flooded more than 100 residential buildings and 300 residents, flooded area large than 50 km², inundated sensitive facility (buildings in which resides a number of people who are especially susceptible to flooding, such as children, elderly and sick).

Sources of data on the flood affected areas of potential future floods the available studies and analyses, assessment of authorities in charge for flood protection and other relevant sources.

Areas of significant flood risk are determined as such if the area:

- was subjected to a significant historical flooding,
- is protected with levees,
- is vulnerable to potential future floods,
- is downstream of the large dam,

but only if:

- it is a functional urban area according to the Spatial Plan of the Republic of Serbia, or has a population density above 10,000 inhabitants/ km² in most of the territory, or contains a sensitive facility or a potential source of pollution.

Legislative document: PRAVILNIK O METODOLOGIJI ZA IZRADU KARATA UGROŽENOSTI I RIZIKA OD POPLAVA - RULEBOOK ON THE ESTABLISHMENT OF A METHODOLOGY FOR THE PREPARATION OF FLOOD HAZARD MAPS AND FLOOD RISK MAPS – not issued

Relation to the other legislative documents:

Law on water, Serbia

EU Water Directive 2000/60/EC and Flood Directive 2007/60/EC

Valid from: In preparation

Short description: N/A

Strategy document: VODOPRIVREDNA OSNOVA REPUBLIKE SRBIJE - WATER MANAGEMENT MASTER PLAN	
Responsible institution: Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia - Republic directorate for water	
Starting date of the implementation: 2001	Contact institution/person: Institute for the development of water resources "Jaroslav Cerni" - Belgrade Dr Marina Babic Mladenovic, E-mail: Marina.Babic-Mladenovic@jcerni.co.rs , Phone No: +381 11 390 64 77
Important documents directly related to the strategy: Law on water, Serbia	
Description of the strategy: WATER MANAGEMENT MASTER PLAN (WMMP) of the Republic of Serbia (VOS) is the base document which sets out the basic strategy for water use, water protection and protection of waters within the territory of the Republic of Serbia. The main strategic objective of WMMP is based on: <ul style="list-style-type: none"> - Maintenance and development of water regimes that provide the cheapest and most appropriate technical, financial and environmental solutions for the unique water management, protection from the harmful effects of water, water protection and use of water. - WMMP of Serbia has the task to ensure the realization of this main strategic objectives, taking into account the often conflicting interests of individual water management areas and sectors and to a large extent by conflicting demands of other users of space. - Part of the strategic objective related to the FRM is preservation and enhancement of flood protection, erosion and floods, as well as other forms of harmful effects of water, where other systems (urban, economic, infrastructure, etc.) indicate how to direct their development to protect against harmful effects of water and all in a single complex regulation of water regime and increase the degree of protection against water to rational levels. 	
Methodology proposed for assessment of FRM and climate change: N/A	