

EU Floods Directive in Croatia Guidance Documents Summary



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EU IPA 2010 TWINNING PROJECT

“Development of Flood Hazard Maps and Flood Risk Maps”

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This document is also available in Croatian language



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Introduction

Water management in the Republic of Croatia is regulated by the Water Act (Official Gazette - OG153/09 and the Act on Water Management Financing (OG 153/09). Both acts are harmonised with EU water related acquis and were adopted in 2009. According to the Water Act, Croatian Waters is obliged to undertake preliminary flood risk assessment, develop flood hazard maps and flood risk maps and to prepare flood risk management plans. The European Commission and Croatia initiated a Twinning project. A consortium of the Netherlands, Austria and France were selected by the European Commission and Croatia. Aim of this Twinning project is to contribute to the implementation of the Water Act through the preparation of flood hazard maps and flood risk maps. One of the results of the project is a series of documents related to the implementation of the Floods Directive by Croatia:

1. A guidance document on the technical aspects of the preparation of flood hazard maps and flood risk maps.
2. A guidance document on the assessment of flood risks and adverse consequences of floods.
3. A guidance document on the integrated assessment of existing and planned civil engineering measures for flood protection.
4. A guidance document on the methodology for assessing potential impacts of climate change on flood risks.
5. A guidance document on the participation of the public and stakeholders in flood risk management.
6. A guidance document on the preparation of the Flood Risk Management Plans.

The guidance documents are addressing the issues concerning the various steps and requirements for the implementation of the Floods Directive. These steps are illustrated by the following figure 1.



Figure 1. The steps under the Floods Directive

The steps are the Preliminary Flood Risk Assessment, the identification of the Area with Potential Significant Flood Risk (APsFR), the elaboration of the flood hazard maps and flood risk maps, and finally the preparation of the Flood Risk Management Plan. As the flooding phenomena is strongly linked to the water quality aspects (chemical, biological) in a river basin, the link with the water framework directive (WFD) has to be established, which is also a requirement of the EU Floods Directive. The steps must also lead to reporting to the European Commission.

The documents prepared during the Twinning process are following a logic illustrated in figure 2.

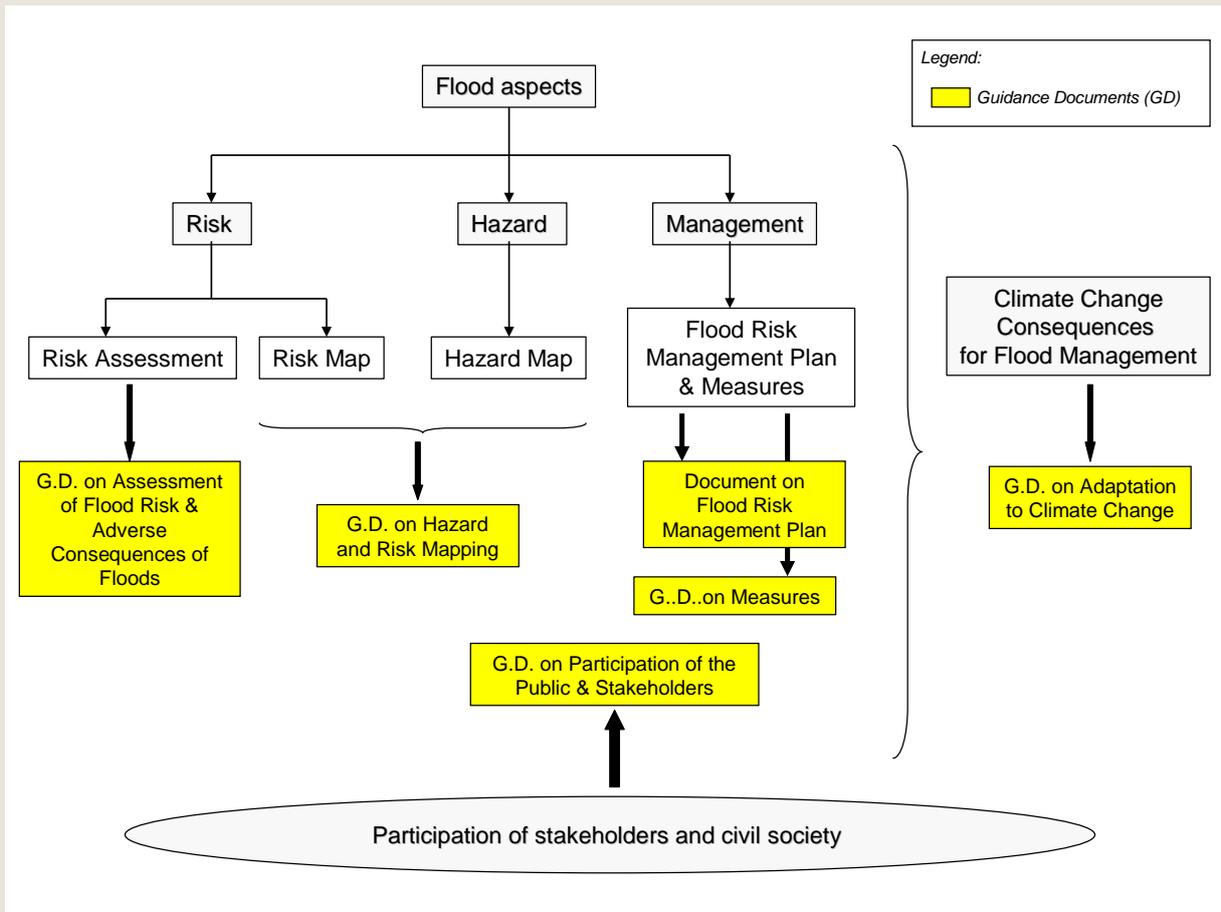


Figure 2. Rationale of the Guidance Documents

To prepare a good Flood Risk Management Plan and to make it efficient during its implementation, all aspects concerning the flood risk have to be addressed. Those aspects are related to the hazard, the risk, and the management of the flood risk. That means concretely the elaboration of a set of hazard and risk maps, the achievement of an assessment of the risk and the development of a management plan which contains the programme of measures to be implemented. Those tasks are addressed in the first three guidance documents: “Hazard & risk mapping”, “Assessment of flood risk” and “Measures” as well as in the general guidance document for the preparation of the Flood risk management plan.

However, to be efficient, all this work must be developed with participation of stakeholders and the public. The stakeholder and public participation is an important horizontal issue relevant in all steps of the process. A specific guidance document is addressing this issue.

Moreover, the climate change has an impact on water and particularly on flooding. It has also impacts on other sectors which in return have an effect on water and flood risk. Therefore, a specific guidance document has been prepared to give guidance on the issue of the adaptation to the climate change in the context of flood risk planning.

Guidance Document on the technical aspects of the preparation of flood hazard maps and flood risk maps: n° 1

The map production has to be seen not only from a technical point of view (data needed and content of the maps) but also from an organisational and political point of view. Before the concrete development of the maps, it is necessary to take into account the following three aspects:

- organising the work
- collecting the data
- informing the public

Organising the work:

First of all, the responsibilities have to be clearly identified. It concerns both the production of the maps and the delivering of data and information. A crucial decision is to select the type(s) of flood that will be considered.

Then it is important to identify the potential user groups of the maps. Depending on the category of user, the needs in term of maps and associated data are very different: the flood crisis manager does not have the same needs as the spatial planner or a property owner. Based on those elements, the type of maps can be designed as well as its content (of course including the requirements defined by the EU directive). It is also important to work with neighbouring countries in the case of the transboundary rivers.

Collecting the data:

Before going to the data collection, the working methods and the standards to produce the maps have to be decided. As many times the historical data is missing (or the accuracy of historical data is too poor), the team in charge of flood data collection has to decide on a method to get missing information and data: information provided by local people, assumptions corrected by local experts, rainfall-runoff model. Whatever the situation, three scenarios have to be provided (low, medium and high). For each scenario, the EU is asking for obligatory maps, both for hazard and risk. Obviously, other maps can be produced, particularly if there is a demand of the future user groups. The document gives a set of data needed for map production. An example how hazard and risk mapping was done for two Croatian pilot areas is also included.

Informing the public:

The information of the public, and if appropriate, participation during the mapping process is a key recommendation. Well-designed participation of stakeholders or the public can help to enhance the comprehensibility and usability of maps, gain additional data and information and support the next steps of the flood management. In addition, the document is addressing the EU reporting process in the Floods Directive process and the links with the Water Information System for Europe (WISE). It is important to get a clear definition of the responsibilities in the reporting process.

Guidance Document on the assessment of flood risks and adverse consequences of floods: n° 2

Croatia has identified around 2000 areas with a potential significant flood risk (APSFRR). The question for Croatian Waters (CW) is how available budgets per cycle will be distributed to finance the necessary measures in a transparent and objective way. This is why this Guidance document should also help to identify „hot spot APSFRs“ and to prioritise them. Data basis for the flood risk analysis are the available hazard and risk maps for three flood scenarios (see Guidance document n° 1). This Guidance document n° 2 is built upon that information. Other scenarios not depicted on the available flood hazard and flood risks maps like structural failure, climate change (see Guidance document n°4), non-protected state, are not dealt with in this guidance document. Other floods than fluvial ones, like torrent floods and sea floods were not taken into consideration in the existing maps either. One has to realise that during the very beginning of the mapping process some assumptions (definitions and choices of legend units) have already been made that could be useful in the whole process. A step-wise approach was proposed and experienced in a working group:

The first step

Simple criteria shall be applied to differentiate between APSFRs with acceptable and non-acceptable risks. This screening shall be done using a GIS algorithm, as 2000 APSFRs will have to be screened. APSFRs with acceptable risks shall not be considered here any further. A feedback loop with regional/local stakeholders (and the possibility to change in individual cases for a good reason) is recommended.

The second step

Criteria and methods shall be applied in order to rank the APSFRs with non-acceptable risks depending on the scenarios (either a total ranking or a ranking in classes). Here again, a consultation of regional / local levels (within and/or outside of CW: see Guidance document n°5) might be advisable for well-argued correction.

The third step

Measures/projects (see Guidance n°3) shall be programmed for the APSFRs with non-acceptable risks (either for all APSFRs or just for a selection or clusters of APSFRs). For these measures, some cost benefit analyses (CBA) and multi-criteria analysis (MCA) shall be applied delivering cost benefit ratio (CBR), net present value (NPV) and MCA results in order to get a prioritised list of measures.

Some political decisions will have to be taken regarding priorities, e.g. whether:

- to address areas with highest risks first or to cover projects with best CBR or best NPV or best MCA results
- to prefer reducing flood risk for high, medium, or low frequency flood scenarios
- to reduce flood risk on which spatial scale: APSFR, catchment, province, etc.
- to allow for other decision criteria like spending budgets in all regions of HR or other
- it might be wise to be prepared that regional/local initiatives will be taken to carry out CBA to try to influence the ranking: be explicit what you do, make decisions transparent.

The document gives also recommendations and points out pros and cons of the proposed approaches. Country examples, literature links and workshop results are included in annexes.

Guidance Document on the integrated assessment of existing and planned civil engineering measures for flood protection: n° 3

Flood risk management plans must include measures (structural and non structural) in order to realise the chosen objectives for flood risk reduction. This guidance document starts with a typology of possible measures; some of them are for hazard reduction while others concern vulnerability reduction.

Some examples of measures are described, in particular for reduction of hydraulic loads, with retention areas, lowering floodplains, dike realignment, bypasses and removal of objects causing hydraulic resistance. Others are related to the flood control/protection like flood control in the upstream or downstream part of a river.

To be efficient and coordinated, the Flood Risk Management Plan and its measures require the long-term supervision of an authority or a steering committee, which should have a long term vision. A vision can be expressed through a few selected axes (examples of vision are provided in the document). The strategy implies a shared vision in line with the legal and other contextual constraints.

In addition to meet the requirements of the strategy, that may include national, regional and local objectives, the measures must be chosen according to the specific context. In particular, structural measures strongly depend on the physical context (available room for storage and/or price of real estate, clustered or sparse housing, slopes, flood regime, existing infrastructure, ecological stakes etc.). It means that measures suitable in one case may not be relevant in another basin. The designing of the structural measures means choosing between different types of solutions and defining their parameters. To assess, compare and prioritize among solutions, efficiency criteria and indicators are needed at the proper scale. The issues of quantifying the effectiveness, the cost benefits analysis of the measures and its prioritisation are presented in the guidance document, relying on some practical examples. The implementation of the measures engenders a financial effort of the public authorities. A list of type of expenditure is provided and sources of funding are presented and examples from other countries are given.

Guidance Document on the methodology for assessing potential impacts of climate change on flood risks: n° 4

The Floods Directive applies to inland waters as well as all coastal waters across the whole territory of the EU. Long term development like climate change has to be taken into account. This means that the consequences of the climate change on floods have to be considered in the Flood Risk Management. This guidance document gives a short overview on the legal and political background on climate change activities related to floods.

In April 2013, the EU Climate Change Adaptation Strategy was published and up to now, fifteen EU Member States have developed national adaptation strategies (NAS). In Croatia, the newest EU member state, the issue of adaptation to climate change is a relatively new topic and hardly any work has been done on adaptation to climate change, neither on national level nor on regional or local level.

According to Article 118 of the Air Protection Act, the Ministry of Environmental and Nature Protection of the Republic of Croatia needs to prepare a comprehensive national action plan on adaptation to climate change, in line with the recommendations of the EU strategy on adaptation to climate change and with the support of EU funding instruments.

There is also an “ICPDR Strategy on Adaptation to Climate Change” (Danube) which is shortly introduced in the paper. The guidance document also refers to the Croatian national activities. Croatia is currently in the process of preparing a national action plan, i.e. strategy on adaptation to climate change. An amendment of the Air Protection Act which includes the development of both a national adaptation strategy and adaptation plan is currently open for public consultation. An Intersectoral Committee for the coordination of policies and measures on climate adaptation and mitigation at national level is already installed.

A short overview of available knowledge and activities as well as a summary of climate trends and risks in Croatia is given. Guiding principles for adaptation and criteria for prioritising actions are given to provide an idea of “quality criteria” for adaptation measures.

As an answer to the needs defined by Croatian Waters, exhaustive information is given concerning scenarios and uncertainties. After an introduction on scenarios, information on how to downscale climate scenarios and their impacts on discharges and flood risks is given. Scenarios might be helpful but the magnitude of the expected changes in climatic and hydrological variables is highly uncertain. This uncertainty poses a set of new and additional challenges for water management.

The chapter how to cope with climate change explains tipping points, gives recommendations on robust decision making and a theoretical input on adaptation pathways. Evaluation of the impact of climate change on the flood risk can take several forms that are shown with two examples.

Guidance Document on the participation of the public and stakeholders in flood risk management: n° 5

The Floods Directive emphasises the active involvement in the process of all interested parties and encourages the member states to perform a broad public information as it is also recommended in the WFD. Additionally to a formal participation an informal participation should be encouraged that is supplementing the formal participation. Of course, all participation activities have to take place within the existing legal framework.

First, the guidance document is describing the benefits of participation. Particularly, public and stakeholder participation is important for the ownership of the work done and for making more efficient decisions and implementations. The process of participation has to be organised properly by following quality criteria.

The aim of the participation process in the flood risk management planning has to be defined, in particular the objectives of the public and stakeholder involvement at the different stages. In this context, the territory concerned has to be identified taking into account territory subjected to floods: territory with direct impacts, the territory of vulnerability (impacted because of its links to the impacted territory) and the territory of solidarity.

It is necessary to get a clear picture of which institutions and people need to be included at the different stages of the participation process in order to meet the objectives. This issue has to be addressed considering the various sectors and the different levels (national, regional, local) of governance. The multilevel governance shifting between vertical and horizontal approaches is highly depending on a solid system of communication, knowledge exchange and dialogue.

The guidance document gives examples of different kinds of stakeholder analysis and describes various tools for this task.

The issue of the representation of all possible interests is crucial for the participation process. The role of the stakeholders during the lifetime of project can vary and therefore, it is important to think about who is needed when and with which role. A list of different stakeholders' roles is provided in the document. Additionally to the stakeholders, the broad public can be included, as people might be affected by risk management.

A context analysis can help to get a first impression of the historical, political and social preconditions and background of the project. For instance a sociogram can be used to show relationships between the stakeholders. The use of social networks may be an opportunity to get real time information, to disseminate key messages and to broadly involve the public in the flood risk management.

The guidance document gives inputs about the various methods to be used in participatory processes, according to the target groups, the type of participation, the expected results and the available resources. Finally an annex is providing an example of a participation exercise in Croatia.

Guidance document on the preparation of the Flood Risk Management Plans: n° 6

This document is a broad general document about the implementation of the Floods Directive. It describes the various steps to prepare a Flood Risk Management Plan (FRMP). These steps are the following:

- Identification of the competent authorities
- Coordination between the Water Framework Directive and the Floods Directive
- Conclusions of the Preliminary flood risk assessment
- Conclusions of the Flood Hazard Maps and the Flood Risk Maps
- Other useful information sources for FRM
- Description of the appropriate objective
- Summary of measures and prioritisation
- Summary of public information and consultation measures
- International coordination.

Each part contains a description of the successive steps, some examples and recommendations. Concerning the issue of competent authorities, the decision on who will be the competent authorities should be taken as soon as possible. There is the possibility to have other competent authorities than in the WFD. Moreover, Croatia should see if the same authority can deal with all parts of the flood management.

As required by the EU Floods Directive, Flood Risk management plans and River basin management plans have to be coordinated. The consequences on the flood of the measures defined in the RBMP have to be quantified. The measures that have a negative effect must be reconsidered. A synergy among the measures proposed by the two plans should be found. The public consultation process needs to be coordinated for the two directives.

For each river basin district, a preliminary flood risk assessment was already carried out. On this basis the areas are identified where potential significant flood risk exists or might be considered likely to occur. Existing data and studies, information of floods in the past can be used for this. The adverse consequences of floods on human health, the environment, economic activities and cultural heritage have to be assessed. It is important to adopt a bottom up approach and a transparent process. If it is not the case in the first cycle, it must be applied during the second generation of plans. The conclusions of the Preliminary Flood Risk Assessment must be included in the Flood Risk Management Plan.

The Flood Hazard Maps and the Flood Risk Maps have to be prepared for the areas with potential significant flood risk according to specifications provided by the Directive. The risk maps show risk receptors like hospitals, airports, schools, and electrical stations etc. The authority shall make available to the public the Flood Hazard Maps and the Flood Risk Maps. Then, the conclusions of the maps can be drawn and inserted in the FRMP. In addition to the use of the maps for the selection of measures, the Flood Hazard Maps and the Flood Risk Maps can be used for many purposes and many sectors as mentioned in the list provided by the document. In particular, the flood risk maps can be used for spatial planning.

The authorities must decide which kinds of flood might be considered and which additional data is needed. Are for instance only floods from rivers considered in the first cycle? Other useful information sources can be used for preparing the FRMP, such as information available in other sectors that deal with floods (e.g.: civil protection, spatial planning, communities ...).

For a better prioritisation of the measures, an economical cost benefit analysis can be executed. Also, the knowledge of the local situation and experiences of the people is often very helpful for the selection of measures. When international river basins are concerned, information from institutions and governmental organizations from neighbouring countries should be used.

The Floods Directive requires establishing appropriate objectives for the management of flood risks for the areas with potential significant flood risk. Possible objectives which could be part of the Croatian strategy are the following:

- Optimising the risk reduction (according to the sector, local situation, geographical situation)
- Coordinated involvement and cooperation between different sectors and institutions dealing with flood risk management - directly and indirectly (e.g. Civil protection, Forestry, Land use planning, RBMP)
- Minimising the risk in a sustainable way
- Raising public awareness for flood risk management
- Optimising crisis management during floods

It might be necessary also to decide on the most appropriate level of the objectives: national, basin, or district? Depending of this decision, a set of objectives can be defined for the two river basin districts of the Adriatic Sea and the Danube.

As the APSFR have been identified, it is necessary to define objectives in those areas; some objectives can be the same for all APSFR but in general certain objectives should be specific to every area. Objectives should be defined also at district scale, taking into account the outcomes from the APSFR. A key question on this aspect is who has to be responsible for defining the objectives at the various levels.

The best should be to translate the national objectives into the river basin district objectives, and then into the APSFR objectives, including the local specificities, particularly those brought in by local stakeholders. To define and prioritise the measures, it is necessary to decide how to do this: using a list of measures (catalogue of measures with well defined characteristics such as description, practical examples, related legislation, specialist field involved, process of implementation) or a free summary of measures.

Then a decision has to be made upon the process for choosing and prioritising the measures. In particular on the level of the selection, which stakeholders have to be involved and which approach (top-down or bottom up or combined) and which type of prioritisation is used.

Examples of measures, both structural and non structural, an example of a catalogue of measures as well as the methods used to define and prioritise the measures are provided.

A proposal for the process how to define and prioritise the Croatian list of measures has been done including a first list of possible key stakeholders. Workshops with Croatian Waters and stakeholders should be the best way for finding the best combination of measures.

The final list of measures should fit in all aspects of the flood management such as prevention, protection, preparedness, recovery and lessons learned.

Regarding the prioritisation of the measures according to the objectives, several methods can be implemented: a timetable for the implementation, a summary text, a category of priority such as for instance critical, high, very high, moderate etc. Along the prioritisation process, it is necessary to think about the need for additional information from WFD objectives, non-structural measures or other relevant information.

The different options for choosing the measures for an APSFR are presented and analysed. As the prioritisation might most probably affect all fields of expertise relevant in an APSFR or other unit of management for which the FRMP is done, a coordinated and balanced prioritisation is recommended. It has to be taken into account that the prioritisation shall be in line with and support the objectives for the FRMP.

The Member States shall also encourage active involvement of interested parties in the production, reviewing and updating of the FRMP. Currently, a pragmatic approach has to be considered as the best solution for Croatia. Even though Croatian Waters recognizes that public participation from the very beginning of the planning process gives advantages, it is expected that full participation will be implemented only for the second planning cycle.

Under the Floods Directive there are several obligations to coordinate aspects of flood risk management in a transboundary context. The Member States have to ensure that an exchange of relevant information takes place between the competent authorities. The coordination of FRMP in international river basin districts should result in producing one single international Flood Risk Management Plan or a set of Flood Risk Management Plans coordinated at the level of the international river basin district.