

# Flood Risk Management Plan for the Danube Basin

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**icpdr** **iksd**  
International  
Commission  
for the Protection  
of the Danube River  
Internationale  
Kommission  
zum Schutz  
der Donau



**KÁROLY GOMBÁS**

*CHAIRMAN, NATIONAL DELEGATE  
FLOOD PROTECTION EXPERT GROUP (FP-EG)*

**INTERNATIONAL COMMISSION FOR THE PROTECTION OF THE DANUBE RIVER**

# Flood Risk Management Plan for the Danube River Basin District

## - general purpose



- ICPDR - Flood Protection Expert Group (FP-EG) - has a mandate to design flood risk management policies and propose respective measures, further responsible for preparation of the **Flood Risk Management Plan for DRBD (level A), reported to EU**
- Key priority on level A = measures with downstream effect and measures applicable in more countries
- FP-EG concluded that only the strategic level measures supported by best examples shall be presented in DFRMP
- Strategic level measures = basic prioritization criterion;  
**Danube basin-wide project focus**

# Flood Risk Management Plan for the Danube River Basin District

## - structure and content



- The plan itself is around 100 pages of text, tables and maps
- General threshold for sub-basin appearance > 4.000 km<sup>2</sup>

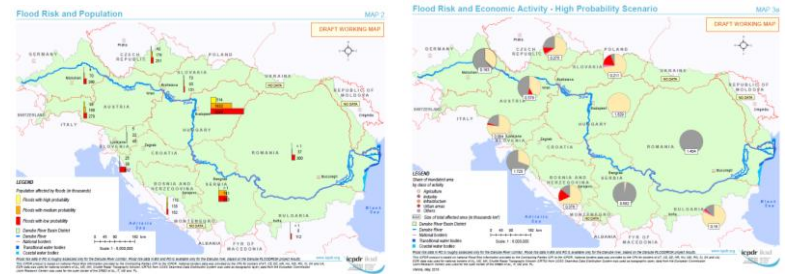
### • Title:

## Flood Risk Management Plan for the Danube River Basin District

### • Annexes:

1. Flood hazard and risk maps
2. FRMP measures
  - Avoidance of new risks
  - Reduction of existing risks
  - Strengthening resilience
  - Raising awareness
  - Solidarity principle

+ *Project list (living list, no prio)*
3. List Competent Authorities
4. Bilateral Agreements



Aspects of flood risk management	Type	Description	Measures by countries
Prevention	Removal or relocation	Measure to remove receptors from flood prone areas, or to relocate receptors to areas of lower probability of flooding and / or of lower hazard	<p>GERMANY</p> <ul style="list-style-type: none"><li>• Removal/relocation</li><li>• Information and training</li></ul> <p>AUSTRIA</p> <ul style="list-style-type: none"><li>• Incorporation of hazard zone plans</li><li>• Relocation and reallocation</li></ul> <p>CZECH REPUBLIC</p> <ul style="list-style-type: none"><li>• Removal or relocation of buildings</li><li>• Spend the rest of buildings and functional use life</li></ul> <p>HUNGARY</p> <ul style="list-style-type: none"><li>• Removal or relocation of dykes</li></ul> <p>SLOVENIA</p> <ul style="list-style-type: none"><li>• Setting a regulation on flood resilient construction (F)</li></ul> <p>SERBIA</p> <ul style="list-style-type: none"><li>• Re-asses legalisation of illegally built structures on flood-prone areas</li><li>• Remove structures illegally built on flood-prone areas</li></ul>

# Flood Risk Management Plan for the Danube River Basin District

## - structure and content



- The textual part has 75 pages with the available/provided national information
  - **The document has structured into 13 main chapters ➤**
  - The aim of the plan is to have a horizontal overview of the national methodologies and results and sum up on the catchment level
  - With the continuous update of the document it is possible to follow the development of the basin
  - ICPDR member countries are providing good practices
1. Introduction
  2. Conclusions of the preliminary flood risk assessment
  3. Flood hazard maps and flood risk maps
  4. Objectives
  5. Measures
  6. Water retention (NWRM)
  7. Cost-benefit analysis
  8. Coordination with DRBMP
  9. Impacts of climate change
  10. International coordination
  11. Solidarity principle
  12. Public information and consultation
  13. Conclusions and next steps.


# Flood Risk Management Plan for the Danube River Basin District

## - good practices (collected 36 so far)

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	<b>AUSTRIA</b>	Status: Implemented
	Upper-Austrian Machland	

**Project:** Flood plain buy-out and relocation as part of an integrated Flood Management

The first study was carried out after the Danube flood 1991 defining zones with non-protectable objects. The buy-out phase started in 1993. The objects in zone I (33) were between the Danube and the HQ-30 flood protection dyke and objects in zone II (221) were between the HQ-30 flood protection dyke and the HQ-100 flood protection dyke. Basis for the amount of the funding was the estimated current value of the object and the estimated damage costs. Legal basis for buy-out was the Federal law for funding of hydraulic constructions. The key conditions were: voluntary participation, 5-year financing scale, new buildings had to be outside the HQ-100 flood area, the zone I/II area was prohibited for new buildings and former building area was rededicated to grassland. The lessons learned are

- Flood plain buy out should start immediately after the incidence
- Excellent team work between state, federal state and municipality are essential
- The more often floods occur the better the this solution works
- Objectives and targets of the measure must be clear and fully transparent
- The population has to be partner and communication is the key



	<b>SLOVENIA</b>	Status: Implemented
	Floodplains in Slovenia	


**Project:** Preventing increase of damage potential of floodplains through conditions and li for constructions and activities

Besides protecting the floodplains without significant damage potential and with important effect on flood extent, an important element of a preventive flood risk management is limiting the introduction of additional damage potential on flood areas. Since 2008 Slovenia is achieving this goal through legal restrictions for public or private investments by conditioning and limiting different types of constructions and activities on flood risk areas. Also the Decree on conditions and limitations for constructions and activities on flood risk areas (Official Gazette of the RS, no. 89/08) presumes that in case of changed hydrological conditions the compensatory measure must be provided to keep the retention capacity and not to worsen the hydraulic situation downstream. This legal measure has been applied on local, municipal and national level of planning and therefore the spatial data needed are continuously provided by hydrologic and hydraulic studies which are made by investors according to the Rules on methodology to define flood risk areas and erosion areas connected to floods and classification of plots into risk classes (Official Gazette of the RS, it. 60/07). The state, municipalities and private investors are obliged to map the flood hazard classes in the process of preparation of spatial planning documents or projects for obtaining water and building permits for the area of interest being located on a floodplain.

Based on studies decisions are being made whether or under what conditions the planned construction or activity is allowed. In the period 2008-2015 over 300 hydrologic - hydraulic studies modelling water depth and speed were made and certified for more than 1000 km<sup>2</sup> of valid result areas. Data from studies are collected in the form of polygon data layers and published in the Environmental atlas for extents Q10, Q100 and Q500, four hazard classes and three water depth classes for Q100 ([gis.arno.gov.si/atlasokolja/profile.aspx?id=Atlas\\_Okolja\\_AXL@Arno](http://gis.arno.gov.si/atlasokolja/profile.aspx?id=Atlas_Okolja_AXL@Arno)).

Preparation and publication of flood hazard maps made according to the methodological rules represents also a non-structural measure raising awareness of flood hazard in the area.




	<b>CROATIA</b>	Status: Implemented
	Lonjsko Polje Nature Park	

**Project:** Central Savana - Wading toward Integrated Basin Management

The Central Sava Basin is an area which combines natural values with the function of storage of floodwaters of the river. 23, 706 ha of the Nature Park are used as natural water retention area. This project developed and improved an integrated management approach in Lonjsko Polje Nature Park. It has been accomplished by applying non-structural flood protection methods which take advantage of the natural functions of wetlands to supplement or replace the existing flood control infrastructures.

More information: [http://life.pp-lonjsko-polje.hr/english/index\\_en.html](http://life.pp-lonjsko-polje.hr/english/index_en.html)



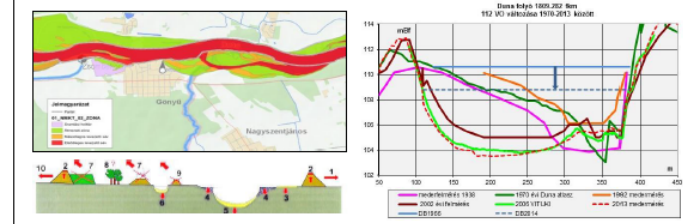
	<b>HUNGARY</b>	Status: Under consultation
	Target area: all rivers with design/regulatory flood levels (app. 2800 km + floodplains)	

**Activity:** Floodplain Management Plans

In Hungary the flood protection has remarkable history and the defence system is highly developed. Events like the Tisza floods and the Danube floods in between 2000- 2013 called attention to the limited capacity of the reservoirs and narrow development possibilities of the structures. Parallel, the continuous field observations, enhanced measuring techniques and numerical investigations prove the unfavourable processes in the floodplains which obstructs the flood conveyance, such as intensive expansion of vegetation in the flow routes because of depression of the low water regime, uplift of the embanked floodplains, morphologic changes in the rivers and the consequences of budget-limited maintenance.

The evolution of the flood management leads towards the sustainable floodplain management. The aim is to keep the characteristic peak levels on the design/regulatory flood level (MASZ - Q1% flood level) or lower them with comprehensive tools. The Hungarian Government made a decision at the end of 2013 to elaborate flood management plans for all rivers or river stretches that possess with MASZ. The legal force adopted in June, 2014. The documentations were carried until the end of the same year. The first step was to define of conveyance zones: primary, secondary, transition, still (legislative change; and official land use limitation). For that 2 dimensional numerical modeling had been carried out on detailed complex terrain raster. The division between the categories: generally based on unit discharge. The banks of the rivers have also been redrawn and with the zonal distribution they will legally affect the users in the floodplain. During the process the morphological history was investigated, but the documentation considers the existing landuse, the regional and national development strategies, forestry, housing nearby the river, WFD and FD aspects, nature protected sites, national border region specialities, navigation and the geometric parameters of the floodplain. The development chapters contain the measures to be taken to enhance the flood transport.

The public consultation of the plans starts in the middle of 2015 and after the harmonization they will be finalized.



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# Annex 2: List of transboundary projects supporting DFRMP

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The projects or project proposals/ideas presented in the Annex 2 were developed by the ICPDR and/or EUSDR PA5 and they shall i.a.:

- Reflect the objectives and priorities set in the DFRMP;
- Have a transboundary character;
- Help to implement the needs listed i.a. in the Annex 2.

## Examples of project proposals / ideas

- Danube Sediment: setting Danube sediment management;
- Danube Floodplain: reducing flood risk through floodplain restoration respecting WFD;
- DANICE: Danube ice flood management;
- Partnership for a living Danube: WWF&CocaCola partnership to restore vital wetlands and floodplains;
- DAREFFORT: Improvement of flood forecasting;
- Developing education/training network.

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## Examples of project proposals / ideas - DR Oper&Cooper -

- Improvement of flood forecasting
- Information exchange on the operation of hydraulic structures
- Coordination of operative flood management plans
- Development of elements of flood risk management plans for trans-boundary sub-units of common interest
- Exchange of flood protection techniques, technologies and experiences
- Develop an education/training network
- Enhance coordination of operative flood protection methods and equipment
- Analysis of catchment reaction on different precipitation scenarios in the upper Danube including identification of retention sites

# Flood Risk Management Plan for the Danube River Basin District

## - remarks



- The availability of the data and plans are in widely different time frame
- The countries' approach and methodology is not homogenous, there are diverse approaches even in neighbouring states
- The results are hard to combine even on sub-basin level, the platform of coordination/harmonization is in lower level: border commissions
- The DFRMP is very useful, the surrounding countries can extract information from each other and implement ideas to their domestics
- DFRMP Annex-II measure list enhances the coordination with WFD-DRBMP and with project listing focal points can be emphasized
- Availability of public consultation version 07/2015 (will be soon updated):
  - <http://www.icpdr.org/main/draftplans-2015>
- National background information (subject of actualization):
  - <http://www.icpdr.org/main/public-participation-2015-national-management-plans>

# Flood Risk Management Plan for the Danube River Basin District

- public consultation: „Voice of the Danube”



- End of 2014 the DFRMP was launched for public consultation, having it available on ICPDR website
- Beginning of July in 2015 in Zagreb, there was a public participation workshop, where over 80 stakeholders from a broad range of backgrounds stood the heat and expressed their views on the draft management plans
- The commenting was open until 22nd of July, numerous hints arrived, which in under implementation process by the country representatives and the FP-EG
- Collected oral inputs + internet-based collaboration (Facebook, Twitter, public messages) + more than 50 written comments were received



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# Flood Risk Management Plan for the Danube River Basin District

## - useful features

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- DFRMP is available for public and readers can benefit from other countries' experiences, furthermore links and contact details are listed to get in touch with foreign experts in the basin
- The basin-wide horizontal plan helps to identify properly the country needs, having in mind the upstream-downstream perspectives. The good practices are bringing fresh thoughts and additional project generation information, furthermore the experiences can be gathered from the contact information provided
- Mandates, responsibilities, tasks and modus operandi for joint activities of ICPDR and PA4/PA5 are clarified in: ICPDR – EUSDR PA4 & PA5  
Coordination: Joint Paper on Cooperation and Synergy for the EUSDR Implementation;
- Avoiding overlaps and the creation of parallel structures is a key principle that is followed at all levels of cooperation;

# Flood Risk Management Plan for the Danube River Basin District

*Presenter: [gombas.karoly@eduvizig.hu](mailto:gombas.karoly@eduvizig.hu)*



- The ICPDR has a clear political mandate and the technical capacities for implementing EFD in the DRB; the momentum created by EUSDR would significantly boost progress in relevant processes by creating added value for both ICPDR and EUSDR also by making better use of measures available for macro-regional cooperation.
- The Plan will be submitted to the ICPDR Ordinary Meeting in December, 2015 and after adoption, it will be introduced to the Ministerial Conference for endorsement by the Danube Ministers in February, 2016
- ICPDR - in particular the FP-EG - is open for future cooperation

## Thank You for your attention!

*ICPDR contact: [igor.liska@unvienna.org](mailto:igor.liska@unvienna.org)*