



# Draft Updated Integrated Tisza River Basin Management Plan

## Annex 12. Measures supporting WFD and FD objectives



Project co-funded by the European Union (ERDF, IPA funds)

## Measures supporting WFD and FD objectives

Field of action	Measure category	Type of measure	Measure
Prevention	Organizational measures (legislative, institutional)	The definition of a legislative, organizational and technical framework for Floods Directive implementation	Preparation of flood hazard and flood risk maps
		Reviewing and updating plans for flood risk management	Update/preparation of documentation for fluvial flood, excess inland water and ice defence
			Update/preparation of documentation for the use and management of the regime of reservoir operation (including the flood water evacuation regime)
			Update/preparation of technical documentation for the legalization of structures for flood protection, erosion and torrents control and for drainage
			Update/preparation of the cadaster of hydraulic structures
			Maintenance and improvement of the Water Information System by establishing connection with other information systems
			Preparation of the erosion map
			Coordination of territorial planning strategies (plans for development of planning at national, county and regional) and urban plans (Regional/Urban/Zonal/Plans) with plans for flood risk management
		Optimization of floodplains zoning with respect to existing infrastructure	
		Entering the boundaries of real and potential flood areas into spatial plans when defining the rules for constructing objects and using floodplains	
		Delineation of water land	
		Flood river bed management plans (the action plans in the riverbed management plans are implemented after the law enforcement, which action is not depending on the water sector)	
		Registering water land in the land register	
		Entering boundaries of water land into spatial plans	
Protection	Natural water retention measures - associated to watercourses, wetlands, natural lakes, in accordance with Directive 2000/60 /EC	Measures to restore retention areas (flood plains, wetlands etc.)	Creating new wetlands
			Floodplain reconnection and restoration
			Renaturation of river banks (vegetation protection)
			-Measures to reduce (decelerate) run-off from river basin into the water courses, to increase retention capability of river basin or to support natural accumulation of water in the suitable areas – measures at agricultural soils, in forests and urban areas -operational erosion control measures (organization of land with respect to

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			<p>erosion control, agro-technical erosion control measures, biological erosion control measures), -technical erosion control measures (erosion control trenches, terraces at hillslopes), technical forestry measures to influence interception and transpiration of forest vegetation, improvement of infiltration properties of forest soils, -measures to decrease storm water runoff, measures to control runoff and decrease water pollution (trenches and ditches, detention and retention ponds and reservoirs, retention soil filters, underground retention reservoirs)</p> <p>Natural rehabilitation of Takta channel between Kesznyéten and Tiszalúc</p> <p>Planning and application of measures for erosion control and natural water retention</p>
	Change or adapt land use practices (partial recovery of ecosystem functions or structures modified by changing or adapting land use practices) in urban areas	Natural water retention measures in urban areas	
	Change or adapt land use practices (partial recovery of ecosystem functions or structures modified by changing or adapting land use practices) for forest management	Natural water retention measures by changing or adapting land use practices in forest management	<p>Improving forest management in floodplains</p> <p>Maintaining the forests area in catchments of A.P.S.F.R.</p> <p>Maintaining and expanding forests in perimeter zones of the reservoirs</p> <p>Expanding the forests in the receiving basins of A.P.S.F.R. (Afforestation outside of the forest area)</p>
	Other water retention measures		<p>Construction of new and reconstruction of existing hydraulic structures for protection from fluvial floods</p> <p>Dykes relocation</p> <p>Rehabilitation works on flood protection structures; river training works and high-water channel</p>

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			Restoration/Increasing of the retention volumes of existing reservoirs (permanent/temporary)
			Improving the conveyance capacity of the riverbed in Middle-Tisza between Kisköre and Csongrád in connection with WFD. *
		Measures to improve retention capacity at the level of river basin by creating polders and small retention reservoirs (made in the upper part of the river basin)	Measures which reduce flood peak discharge – construction, maintenance, repair or reconstruction of water structures: - dams and reservoirs, - dry or semi-dry reservoirs, polders, - bypass canals. Optimization of operational rules with respect to flood control and other purposes of reservoirs utilization
			Planning to preserve and expand existing and establish new retention areas
			Construction of 39 mountain reservoirs with total volume in conditions of 0,5 % probability 296 mln. m <sup>3</sup> , Upper Tisza
			Construction of 4 retention polders with total volume in condition of 0,5 % probability 70 mln. m <sup>3</sup> , Upper Tisza
	Measures to improve retention capacity at the level river basin by increasing the safety of existing large dams / increasing the attenuation capacity of reservoirs towards projected capacity		
	Structural protection measures (planning and accomplishing)		
	Measures for increasing population resilience	Measures for increasing resilience of population (Implementation and adaptation of protection measures at multiple objectives - buildings, constructions)	Mobile flood protection barriers
			Measures which protect land from inundated „inner waters“ – installations (equipment) for pumping the „inner waters“
	Inspection measures and maintenance of watercourses and of the hydraulic flood protection infrastructure	Surveillance, behaviour monitoring, expertise, strengthening interventions, rehabilitation and maintenance of watercourses and hydraulic flood defence infrastructure	Vásárhelyi Plan: Reconstruction of hydraulic structures*
			Measures which protect land from inundated water of water courses – technical river training works, flood protection dykes, walls, embankments, other linear flood protection structures. Measures to ensure adequate flow capacity of the channels of watercourses – maintenance of river channels and their vegetation, removal of deposits. Reconstruction or maintenance of bridges to enhance their capacity during floods

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	Adapting of the existing protection structures at climate change conditions	Adapting of the construction, infrastructure and existing defence structures in terms of climate change	
Public awareness	Measures to increase community awareness	Activities regarding adequate public information and promotion of the public participation	Awareness-raising about flood risk, possible flood protection measures, general public input into increasing flood protection at local level
		Education / training activities of the population	Presentation of flood hazard and flood risk maps, flood management plans. Raising public awareness. Training campaigns focused at flood preparedness among municipalities
Preparedness	Preparedness measures /Improvement preparedness to reduce the adverse effects of floods	Measures for monitoring, forecasting and flood warning	Upgrade and enhancement of national flood forecasting and warning services by building new monitoring system (radar and precipitation stations) and new forecasting models for more water gauge stations. Strengthening cooperation in the field of flood forecasting and warning – Danube basin-wide, international and bilateral agreements and systems
			Information about flood event and warning between neighbouring countries based on bilateral commissions. Using the outputs of EFAS - flood warning system among Danube's countries
		Development / reviewing of the flood protection plans in correlation with other emergency situation management plans (GIES- General Inspectorate for Emergency Situations)	
		Simulation exercises activities involving interinstitutional parties	Emergency flood equipment response measures – strengthening flood response capacities, improvement of cooperation between different sectors, institutions and professionals involved in flood management
			Strengthening of operational cooperation among the emergency response authorities in the international Danube basin, improvement of interoperability
Providing the human, financial and materials needed in emergency situation and stimulating the voluntary actions	Preparation of the General Flood Defence Plan Preparation of the annual Flood Defence Action Plan Bilateral cooperation Regional cooperation		

Field of action	Measure category	Type of measure	Measure
Response and Recovery/ Reconstruction	Post event recovery measures	Response actions in case of emergency situations	
		Damage assessment and restoration	
		Documentation and Analysis	

Note: \* Downstream cumulative effects of retentions along the Tisza in Hungary should be evaluated in the frame of bilateral cooperation between Hungary and Serbia.

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Partners: General Directorate of Water Management, Hungary | Global Water Partnership Central and Eastern Europe, Slovakia | International Commission for the Protection of the Danube River, Austria | Ministry of Water and Forest, Romania | Ministry of Foreign Affairs and Trade, Hungary | National Administration “Romanian Waters”, Romania | National Institute of Hydrology and Water Management, Romania | Public Water Management Company “Vode Vojvodine”, Serbia | Regional Environmental Center for Central and Eastern Europe, Hungary | The Jaroslav Černi Institute for the Development of Water Resources, Serbia | Water Research Institute, Slovakia | World Wide Fund for Nature Hungary

Associated Partners: Interior Ministry, Hungary | Ministry of Agriculture and Environmental Protection Water, Serbia | Secretariat of the Carpathian Convention (SCC), Austria | State Agency of Water Resources of Ukraine | Tisza River Basin Water Resources Directorate, Ukraine