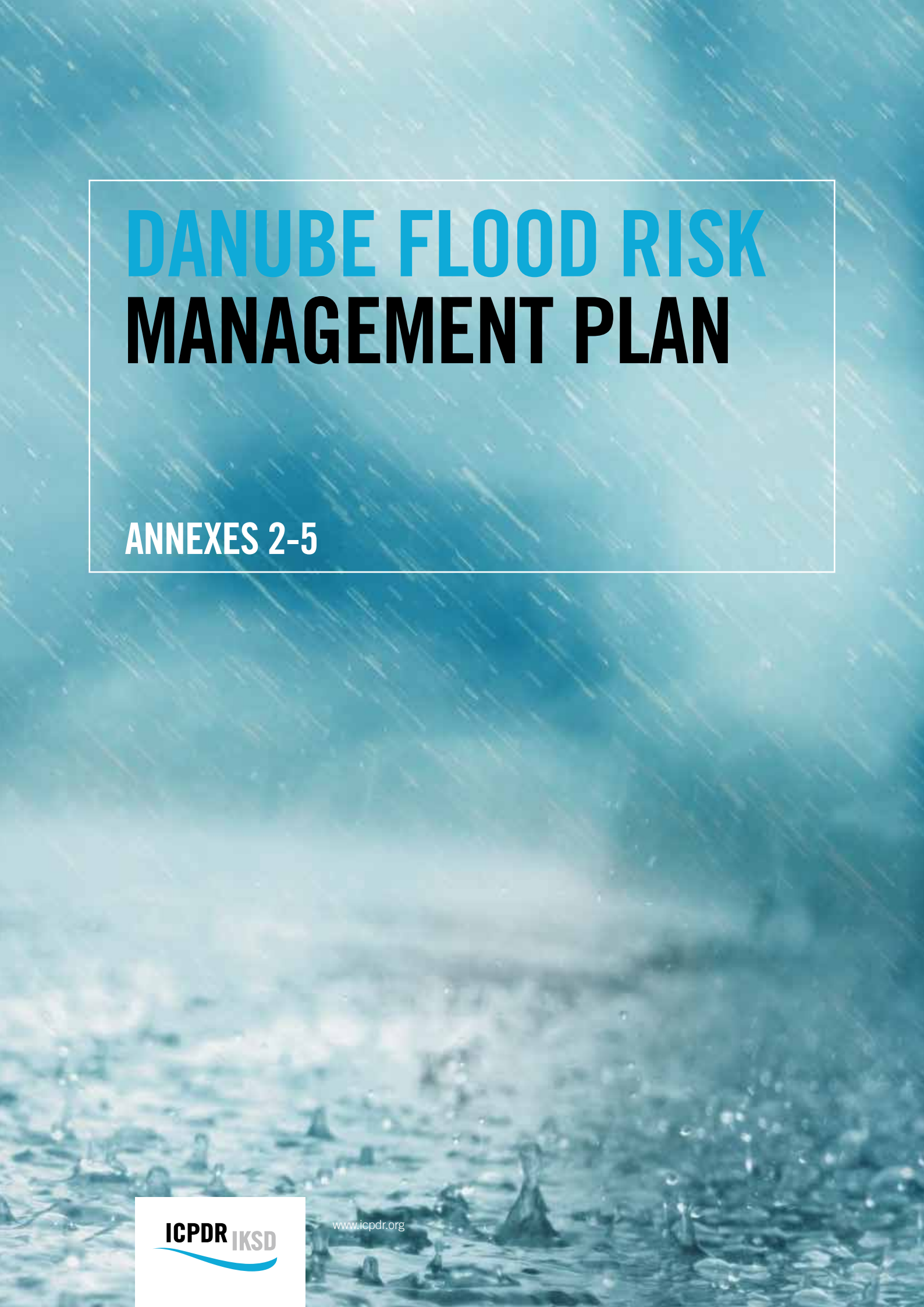
DANUBE FLOOD RISK MANAGEMENT PLAN

ANNEXES 2-5



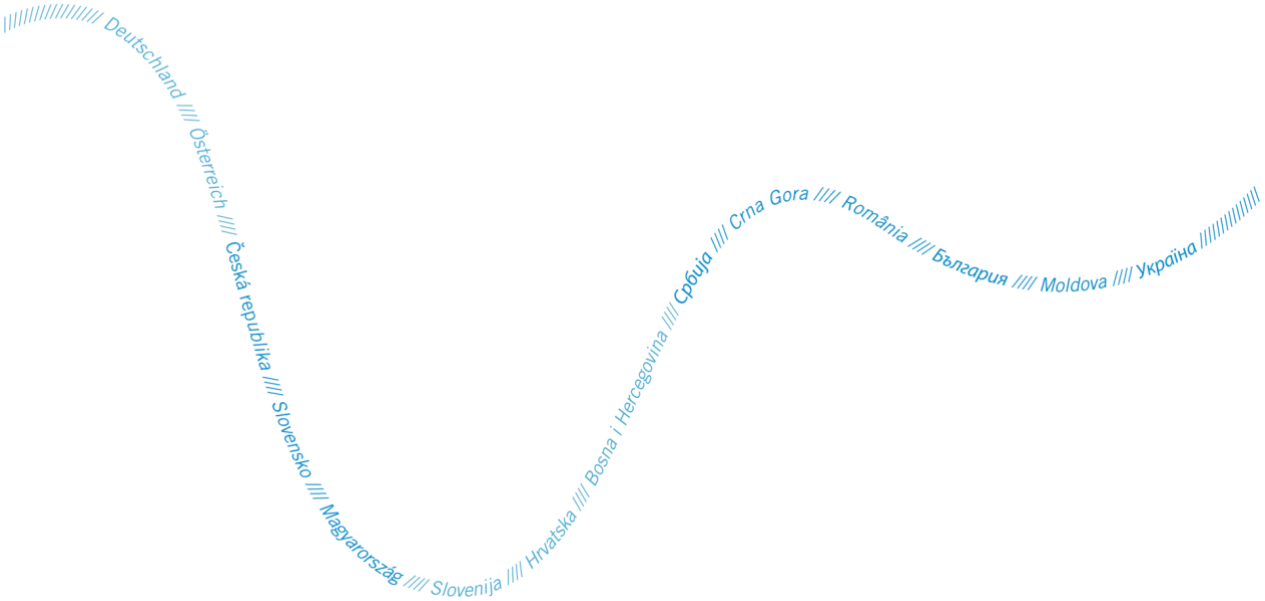
ICPDR IKSD

www.icpdr.org

Danube Flood Risk Management Plan Update 2021: ANNEX 2 Overview of measures

Overview of measures for achieving the objectives for the management of flood risks in the Danube River Basin District

Version: final
Date: 15 Nov 2021



Imprint

Published by:
ICPDR – International Commission for the Protection of the Danube River

Contact
ICPDR Secretariat
Vienna International Centre / D0412
P.O. Box 500 / 1400 Vienna / Austria
T: +43 (1) 26060-5738 / F: +43 (1) 26060-5895
icpdr@unvienna.org / www.icpdr.org

Table of content

1 Introduction

Directive 2007/60/EC on the assessment and management of flood risks (European Floods Directive, FD) requires that Member States on the basis of the flood hazard and flood risk maps shall establish flood risk management plans coordinated at the level of the river basin district.
Member States shall establish appropriate objectives for the management of flood risks for the areas identified under FD Article 5(1) and the areas covered by FD Article 13(1)(b), focusing on the reduction of potential adverse consequences of flooding for human health, the environment, cultural heritage and economic activity, and, if considered appropriate, on non-structural initiatives and/or on the reduction of the likelihood of flooding.
The flood risk management plans have to include a summary of the measures and their prioritisation aiming to achieve the appropriate objectives of flood risk management, including the measures taken in accordance with FD Article 7, and flood related measures taken under other Community acts, including Council Directives 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (1) and 2012/18 EU on the control of major accident hazards involving dangerous substances (2), Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (3) and Directive 2000/60/EC.
According to FD Article. 14 the flood risk management plan(s) shall be reviewed, and if necessary updated, including the components set out in part B of the Annex, by 22 December 2021 and every six years thereafter. The part B of the Annex refers to components of the subsequent update of flood risk management plans:

1. any changes or updates since the publication of the previous version of the flood risk management plan, including a summary of the reviews carried out in compliance with Article 14;
2. an assessment of the progress made towards the achievement of the objectives referred to in Article 7(2);
3. a description of, and an explanation for, any measures foreseen in the earlier version of the flood risk management plan which were planned to be undertaken and have not been taken forward;
4. a description of any additional measures since the publication of the previous version of the flood risk management plan.

In accordance with the FD Article 7(2) the ICPDR agreed upon the following objectives for the Flood risk management plan for the Danube River Basin District:

- Avoidance of new risks
- Reduction of existing risks

- Strengthening resilience
- Raising awareness
- Promoting the solidarity principle

This overview of measures is structured in accordance with these basin-wide objectives. This is a living non exhausting list of measures which could be amended if relevant.

2 Measures to avoid new risks

Aspects of flood risk management	Type	Description	Measures by countries
Prevention	Avoidance	Measure to prevent the location of new or additional receptors in flood prone areas, such as land use planning policies or regulation	GERMANY • Regional planning • Designation of floodplains • Urban land-use planning • Adapted landuse • Flood adapted planning and construction • Flood adapted handling of water-hazardous substances • Conceptions / studies / expertise • Information and training AUSTRIA • Compilation and update of hazard zone plans • Incorporation of hazard zone plans in spatial planning, building regulation and emergency management decisions • Development of concepts, plans, projects, strategies on catchment scale to improve the water and sediment balance • Compilation and incorporation of local and regional land use planning and land use development strategies • Definition of a framework for implementation and maintenance of flood protection and mitigation measures. CZECH REPUBLIC

			• Elaboration or update of the zoning plans (to define area without buildings) • Application of results of flood hazard maps and flood risk maps as a limits in zoning plans • Change of functional use in zoning plans • Raising of buildings and other structures resilience (technical regulations) SLOVAKIA • Incorporation of delineated flood prone areas into spatial planning HUNGARY • New regulations on the flood risk areas on land use planning (less valuable land use) • New regulations on the flood risk areas in the field of construction (water resistant constructions) SLOVENIA • Measure U1 - Flood hazard and flood risk mapping (legal restrictions for public or private investments through conditions and limitations for constructions and activities on flood risk areas & prevention of increasing the damage potential on flood hazard areas through municipal spatial plans and national spatial plans) • Measure U2 - Natural water retention measures • Measure U3 - River basin wide land use adaptation CROATIA • Continuation of activities on formal introduction of a special level of protection and maintenance of natural water retention and wetland areas and boundaries of the public water domain in the process of physical planning • Continuation of activities on registration of the public water domain in land registry • Monitoring of conditions on the public water domain

			SERBIA • Delineation of “water land”, its registration in land registries and entry into spatial plans • Entry of flood hazard areas into spatial plans of local self-government units and into urban plans, with definition of rules for the construction of the facilities and the use of flood hazard areas • Delineation of erosion-prone areas, entry into spatial plans and definition of conditions for their use BOSNIA AND HERZEGOVINA • Inclusion of flood areas into the spatial plans and other planning documentation • Preparation of missing maps of flood hazards for rivers ROMANIA • Introduction of flood hazard maps and flood risk maps in the Urban and Local Development Plans and update of the General Regulation and the Local Urbanism related to the General Urban Plans for territorial administrative units, by including medium and long term requirements, related to flood risk area, identified in the flood risk area and adoption of measures contained in the FRMP. • Territorial planning and urban planning based on flood risk assessments (flood studies) at different levels of detail, depending on their purpose (GUP – strategic flood risk assessments; ZUP/DUP – specific flood risk assessments). • Criteria and regulations for construction in the flood zone (e.g. updating the design levels of constructions in the flood zone) BULGARIA • Legislative restrictions of the construction works in the floodplains • Prohibition of the construction in flood-prone zones. • Restrictive measures to the investment intentions in areas adjacent to the river’s bed.

			MOLDOVA • Preventing location of new or additional receptors in flood prone areas UKRAINE • Compliance of approved flood areas • Compliance of legislative documents related to the territorial development
Preparedness	Emergency Event Response Planning / Contingency planning	Measure to establish or enhance flood event institutional emergency response planning	GERMANY • Emergency event response planning • Conceptions / studies / expertise • Information and training AUSTRIA • Development of flood aware emergency management plans • Organisation of flood emergency operations and trainings especially with local fire brigades and potentially affected inhabitants CZECH REPUBLIC • Flood inspection on rivers, water reservoirs and water structures HUNGARY • Renewal of the flood protection plans • Recalculation of design flood levels SLOVENIA • Measure U14 - Contingency planning (flood event simulation exercises, creation and updating of regional and local emergency response plans for all APSFRs and other flood prone areas, providing additional flood response equipment)

			CROATIA • Updating of flood protection systems management plans and operative flood defence plans • Harmonization of operative flood defence plans with National civil protection directorate • Monitoring of data on flood events and effectiveness of flood protection measures SERBIA • Monitoring and inspection of the condition of flood protection structures • Monitoring and inspection of condition of erosion and torrents protection structures, the erosion processes and condition of torrential flows • Monitoring and inspection of condition of publicly owned drainage systems • Scenario development and action plan for localization of flooding (secondary defense line, controlled flooding, etc.) • Data and information exchange between institutions responsible for flood defense • Simulation exercises of response during floods • Capacity building of local self-government units for participation in flood defense BOSNIA AND HERZEGOVINA • Preparing report on setting limits concerning surface water in municipal cadastres • Application of restrictions related to flood areas and surface waters. • Application of agro-technical measures, forests managing measures and land-use in accordance with the nature protection. ROMANIA • Improvement of the monitoring systems, forecast models and warning systems (meteorological and hydrological); • Improvement of capabilities for detection and monitoring of hydrological dangerous phenomena (torrents, flash floods in small catchments, rapid increase of flows and in

			urban areas) - Supplementary monitoring points of levels and precipitation - automatic stations at bridges or pipeline trespasing - Video Surveillance for river flow monitoring and ice jam - New sensors generation for real time detection and alarm of thresholds exceedance by rainfall and torrential runoff intensity - Upgrade of national meteorological radar network - Pluvial monitoring network in urban areas and streets with risk on flooding survey (including flood mark installation) and water in sewerage systems - Dyke survey equipment (high resolution data collection cameras and drones connected to GIS, optical cables survey systems, inclinometers humidity survey etc.) and dam survey/monitoring equipment • Training and building administrative capacity of human resources (monitoring, forecast, dissemination); • Development/revision of flood defence plans correlated with other associated emergency management plans (Civil Protection Plans); • Updating the Civil Protection Plans: analysis of the population evacuation from the affected areas and the access roads to safe areas, signaling / identification of alternative access routes, resources completion of the rapid intervention centers of NARW and for Civil Protection and local authorities interventions • Annual simulation exercises with the participation of all county institutions with responsibilities in flood risk management, Improving the intervention action and cooperation of the authorities involved in the management of emergency situations BULGARIA • Elaboration or update of emergency action-plans for water systems and hydrotechnical facilities. • Develop of special flood-related action-plans for the “SEVESO” facilities MOLDOVA • Issuing of the DECISION NO. 1340 from 04.12. 2001 of the Commission for

			Emergency Situations of the Republic of Moldova on undertaking specific tasks related to population and territory protection from emergency situations UKRAINE • Development and approval of yearly plans on emergence response • Application of plans and solutions of commissions on of technogenic and ecological secure and emergency • Confinement plans development

	Other preparedness	Other measure to establish or enhance preparedness for flood events to reduce adverse consequences	GERMANY
			• Insurance, financial precautions
			
			AUSTRIA
			• Targeted information referring to individual responsibility and options for object-oriented measures
			HUNGARY
			• Communication of flood risk
			• New regulation of the financial circumstances
			
			SLOVENIA
			• Measure U14 - Contingency planning (flood event simulation exercises, creation and updating of regional and local emergency response plans for all APSFRs and other flood prone areas, providing additional flood response equipment)
			CROATIA
			• Regulation of obligations of regular monitoring, analysis and reporting
			  ○ Conditions of flood protection structures and systems
			  ○ Data on flood events and effectiveness of flood protection measures
			  ○ Conditions on the public water domain
			• Establishment of a registry of legal entities certified for performing preventive and operational flood defence

			SERBIA • Review of criteria for declaring flood defense phases • Bilateral cooperation • Regional cooperation (ICPDR, ISRBC, international projects, trainings, exercises, etc.) • Data and information exchange between institutions responsible for flood defence • Capacity building of experts and institutions responsible for flood defence BOSNIA AND HERZEGOVINA • Maintenance of existing flood protection facilities • Impact of climate change • Update of hydrological studies for characteristic high waters • Promotion of best practices in emergency flood defence • Development of a guide for the assessment of the embankment condition ROMANIA • Ensuring the preparation of human and material resources necessary for the management in good conditions of the emergency situations generated by the floods, including the groups of volunteers to participate in the rescue actions - evacuation of the population; endowment with materials and means of intervention at county/local level for Civil Protection, NARW, County and local authorities, as well as for all the owners of works with flood defence role. Ensuring material resources is available for dyke protection and enhancement, quality control of drinking water, advice on disinfection of wells and supply of water from alternative sources • Improving the degree of property insurance through mandatory policies and additional/complementary insurances, insurance of public assets, economics activities etc BULGARIA

			• Monitoring and forecasting of rainfall / runoff in the river basins. Monitoring of the dams • Broad access to the information and forecasts on water level, river-flow and ice conditions MOLDOVA • Communication on flood situation • Strengthening levees UKRAINE • Determination of potentially dangerous hydrotechnical structures • Modelling of the possible emergency situations
Protection			GERMANY • Assistance in urban pluvial flood risk management AUSTRIA • Improvement of retention capacity on catchment scale • Restoration of flood plains and sedimentation areas • Structural protection measures • Object oriented measures • Relocation and reallocation • Improvement of river inspection • Maintenance of protection and mitigation measures, river maintenance SLOVENIA • Measure U7 - Structural flood protection measures • Measure U8 - Individual flood protection measures

		ROMANIA • Maintaining or increasing the proportion of forested area in the upper basins of watercourses (not only APSFR); • Maintaining or increasing the area of forests intended for: - hydrological protection; - intended for land and soil protection; • Floodplain and riparian woodlands management, including forest protection curtains for dikes • Reduction of runoff on the slope through anti-erosion forest curtains (agroforestry systems) • Reduction of local slope runoff through earthworks or the use of "surface runoff barriers" (earth waves / small wooden constructions, stone walls, hedgerows) • Improvement of lands affected by deep erosion or surface erosion by afforestation - requires supporting works for land stabilization terracing, erosion barriers, etc. • Promote and implement best practices in slope agriculture (e. g. cultivation practices for soil conservation) • Re-meandering, Restoration of channel and floodplain features (including reforestation of riverbanks for mitigation of erosion phenomena); • Leaky barriers (includes large woody structures, leaky weirs and soft engineered features) • NWRM - Offline storage areas (In-stream leaky weirs and/or lowered bank tops promote flood spilling, aiming to temporarily store floodwater on floodplain • Beach recharge • Creation of new permanent/non-permanent on-line (in – line) reservoirs • Creation of new off-line reservoirs • Heightening of dams to increase the storage capacity • Increasing the capacity of large spillways in order to increase the discharge capacity • Increasing riverbed transit capacity by resizing bridges

		• Updating / amending/ optimizing the operation rules of reservoirs in order to increase the attenuation capacity; the coordinated operation of reservoirs in cascade • Inter-basins connection channels (flood discharges/water volumes derivation) • Removal of retaining structures (dams' removal) - to be studied in each case. • Channelling of the river - local interventions (including stabilisation of the river bed) • Inventory of hydrotechnical works for the improvement of torrential riverbeds and evaluation of their status / functionality; • Rehabilitation of hydrotechnical systems used for the improvement of torrential riverbeds; • Consolidation of torrential riverbeds with small hydrotechnical works (up to 5 m elevation); • New dikes (along localities) or building second protection lines; • Protection dikes for coastal areas; • Heightening of the existing embankments; • Dikes rehabilitation for operating to their design standards; • Assessment of setting back, partial or full removal of flood embankments (to be studied in each case); • Enhancing/Rehabilitation of sewage systems, drainage systems, pumping stations (including improvement of the drainage of linear infrastructures: roads, railways, if necessary); • Development and/or adaptation of existing regulations regarding Sustainable Drainage Systems; • Development of guidance publications of good technical practices in the implementation and maintenance of drainage systems • Enhancing artificial drainage capacities through sustainable drainage systems. •
Other		GERMANY • Financial aid program

		AUSTRIA • Information and training initiatives SLOVENIA • Measure U1 - Flood hazard and flood risk mapping • Measure U2 - Natural water retention measures • Measure U3 - River basin wide land use adaptation • Measure U4 - Hydrological and meteorological monitoring • Measure U5 - Flood risk related databases • Measure U6 - Raising awareness about flood risk • Measure U9 - U9 Continuous efficiency control of the flood protection measures • Measure U10 - Water infrastructure maintenance works • Measure U12 - Proper management of flood, water, hydropower and other infrastructure • Measure U15 - Flood forecasting BOSNIA AND HERZEGOVINA • Application of anti-erosion measures in the river basins and measures for torrents defence • Maintenance of objects against erosion and torrents • Development of flood risk insurance CROATIA • Analysis of the climate change effects on the concepts of flood protection and flood risk management

		ROMANIA • Preparation of studies to improve knowledge on flood risk management: - start a national programme to delineate flood zones by hydraulic modelling for the whole territory of Romania (and not just for APSFR) - improved statistical analysis, effect of climate change - development of new hydrological data sets to support the hydrological and hydraulic modelling - flood vulnerability assessment, flood risk mapping; - studies and analysis of environmental, economic and social viability of structural actions; completion of a WFD, Habitats Directive, Birds Directive Compliance Assessment and coordination with EU strategies (EU Biodiversity Strategy for 2030, EU Strategy on Green Infrastructure • Enhancing flood management policies / strategies/legislative framework • Maintenance of riverbeds • Carrying out maintenance works for the safe operation of existing hydraulic structures and related equipment (e.g. maintenance and repairs etc.) • Restoring/Maintaining the attenuation volumes of existing reservoirs / storages (permanent/non-permanent) • Increasing the safety of existing dams, intakes (e.g. retrofitting measures to limit infiltrations, etc.) • Ensuring the preparation of human and material resources necessary for the management in good conditions of the emergency situations generated by the floods, including the groups of volunteers to participate in the rescue actions - evacuation of the population; endowment with materials and means of intervention at county/local level for Civil Protection, NARW, County and local authorities, as well as for all the owners of works with flood defence role. Ensuring material resources is available for dyke protection and enhancement, quality control of drinking water, advice on disinfection of wells and supply of water from alternative sources • Improving the degree of property insurance through mandatory policies and additional/complementary insurances, insurance of public assets, economics activities etc

		BULGARIA • Flood-resilient design and construction of buildings

3 Measures reducing the existing risks

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	GERMANY • Removal/relocation • Information and training AUSTRIA • Incorporation of hazard zone plans • Relocation and reallocation • Information and training CZECH REPUBLIC • Removal or relocation of buildings • Spend the rest of buildings and functional use life HUNGARY • Removal or relocation of dykes

			SLOVENIA • Measure U2 - Natural water retention measures • Measure U3 - River basin wide land use adaptation SERBIA • Removal of potential sources of pollution in case of floods from flood hazard areas • Removal of structures illegally built in flood hazard areas BOSNIA AND HERZEGOVINA • Relocation of most endangered population based on risk map data • Relocation of any potentially dangerous industrial facilities away from the flood risk areas ROMANIA • Analysis of technical and economic possibilities for the relocation of buildings from flood zones with water depths greater than 1-1.5 m to other areas with lower water depths (corresponding to the event with a probability of 1%), with the identification of legal solutions and funding sources. BULGARIA • Removal of illegally built constructions, barriers, and other artificial obstacles located in the river's beds or in the gullies • Closure and reclamation of unused and abandoned industrial and contaminated sites MOLDOVA • Removal or relocation of buildings

			UKRAINE • Settling out of population from the flood hazard area • Change of land use
	Reduction	Measure to adapt receptors to reduce the adverse consequences in the event of a flood actions on buildings, public networks, etc...	GERMANY • Flood adapted renovation • Physical protection of buildings • Flood adapted handling of water-hazardous substances • Conceptions / studies / expertise • Information and training • Research and development projects and best practice projects AUSTRIA • Object oriented measures • Definition of a framework for implementation and maintenance of flood protection and mitigation measures. CZECH REPUBLIC • Individual flood protection measures SLOVAKIA • optimisation of floodplains zoning with respect to existing infrastructure HUNGARY • training local defence leaders, municipality responsible groups • update or create local defence plans • update regional localization plans

			SLOVENIA • Measure U8 - Individual flood protection measures SERBIA • Reassessment of the flood protection level and optimisation of the size of flood protected areas • Local flood protection measures (on single or group of buildings), wherever possible • Reassessment and modification of vulnerable infrastructure (especially road and railroad crossings on rivers) • Training and encouraging population to implement flood self-protection measures BOSNIA AND HERZEGOVINA • Promotion of good practice for the construction of residential and infrastructure facilities in floodplains • Promotion of self-protection measures for the population against floods ROMANIA • Adaptation measures of existing buildings located in flood zones, with the identification of legal solutions and funding sources; • Examples of measures to adapt existing buildings in flooded areas Internal property measures - Avoidance technology - Building elevation; - Controlled/accepted flooding (wet floodproofing)-construction materials must be water resistant and all utilities must be above the flood design (the measure does not apply to floods characterized by high depths and

			water velocities) - Dry floodproofing-blocking the entry of water into the basement and sealing the building (with waterproof foils or other materials to prevent water from entering the house) and is applicable in areas characterized by flood shallow depth and low water speed. External property measures - Protection barriers (Berms/Local Levees and Floodwalls) - ring structures that can be placed around a single building or a small group of buildings (must also include drainage and drainage systems to evacuate water from the protected enclosure) - Temporary protective barriers - construction of movable parapets. • Permanent protective barriers - construction of fixed parapets, local dikes / flood protection walls. Publication of guidelines / elaboration of regulations regarding measures for adaptation of existing buildings in floodable areas / Increasing population resilience Guidelines BULGARIA • Assessment of the discharge and drainage of rainwater – especially via the sewage network • Construction /re-construction of drainage facilities • Construction of new sewerage networks with sufficient capacity UKRAINE: • Construction of flood protection structures in compliance with approved programs
	Other prevention	Other measure to enhance flood risk prevention (may include, flood risk modelling and assessment, flood vulnerability	AUSTRIA • Compilation and update of hazard zone plans • Compilation and incorporation of local and regional land use planning

		assessment, maintenance programmes or policies etc...)	strategies CZECH REPUBLIC • Individual evaluation of flood risk and comparison with vulnerability • Programme to finance, to maintain and to check flood protection measures • Technical and safety supervision of water structures • Using of good agricultural practice principle (selection of plants, rotation of plants etc.) SLOVAKIA • Effectiveness validation of flood mitigation and protection measures by hydraulic modelling HUNGARY • Flood modelling • Land use changes on the catchment area • Education SLOVENIA • Measure U1 - Flood hazard and flood risk mapping CROATIA • Assessment of status and updating (if needed) of concepts of the existing: ○ For the purpose of harmonization with the flood risk management objectives ○ For the purpose of compensation for an increase in the flood risks due to the use of natural water retention, wetland and floodplain areas for settlements and agricultural areas in the process of uncontrolled construction and urbanization of such areas ○ Assessment of functionality of the existing regulation and protection

			facilities SERBIA • Review and if necessary, update of the Preliminary Flood Risk Assessment • Preparation of a disaster risk assessment in accordance to the Law on Disaster Risk Reduction and Emergency Management • Update/preparation of documentation for flood defense • Update/preparation of documentation for the use and management of the operational regime of reservoirs • Preparation of standards and norms for the maintenance of flood protection structures, erosion and torrents protection structures and drainage systems and for the implementation of flood defense • Update/preparation of the register of hydraulic structures • Update/preparation of the register of torrents • Maintenance and upgrade of the Water Information System with the establishment of connection with other information systems • Increase of the efficiency of the inspection service • Preparation of flood hazard and flood risk maps • Preparation of the erosion map • Entry of the erosion-prone areas into the planning documents of the agriculture and forestry sectors BOSNIA AND HERZEGOVINA • Reconstruction measures for flood defence objects • Regular ongoing maintenance of existing flood defence objects • River training projects in the areas indicated by flood risk maps • Flood modelling

			ROMANIA • Preparation of studies to improve knowledge on flood risk management: - start a national programme to delineate flood zones by hydraulic modelling for the whole territory of Romania (and not just for APSFR) - improved statistical analysis, effect of climate change - development of new hydrological data sets to support the hydrological and hydraulic modelling - flood vulnerability assessment, flood risk mapping; - studies and analysis of environmental, economic and social viability of structural actions; completion of a WFD, Habitats Directive, Birds Directive Compliance Assessment and coordination with EU strategies (EU Biodiversity Strategy for 2030, EU Strategy on Green Infrastructure • Enhancing flood management policies/strategies/legislative framework • Maintenance of riverbeds BULGARIA • Flood risk modelling and mapping MOLDOVA • Preparation of flood risk and flood hazard maps UKRAINE: • Elaboration of flooded areas • Elaboration of confinement plans • Development of automated monitoring and modelling systems
Protection	Natural flood management / runoff and catchment	Measures to reduce the flow into natural or artificial drainage systems, such as overland flow interceptors and / or storage,	GERMANY • Natural water retention in the catchment • Natural water retention in wetlands

	management	enhancement of infiltration, etc and including in-channel , floodplain works and the reforestation of banks, that restore natural systems to help slow flow and store water.	• Reduction of sealing • Natural water retention in settlement area • Recovery of floodplains • Conceptions / studies / expertise • Research and development projects and best practice projects • Information and training AUSTRIA • Restoration of flood plains and sedimentation areas • Definition of operating instructions for flood prone and flood influencing facilities CZECH REPUBLIC • Erosion protection measures in the river basins (complex land processing) • Support of rainfall infiltration • Interruption of trajectories of concentrated runoff (including forest roads) • Restoration of small retention areas • Restoration or revitalization of old amelioration structures • Protection and restoration of floodplains • Good management of alluvial plains to reduce runoff • Revitalization of rivers SLOVAKIA 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 (organisation of land with respect to

			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) HUNGARY • divert the excessive water amount to surrounding sub-catchments if possible, to enhance storage capacity • increase the floodplain and riverbed storage capacity usage SLOVENIA • Measure U2 - Natural water retention measures (restoration and reconnection of floodplains and meanders, upstream afforestation, adaptation of agricultural practices to improve infiltration potential and to decrease runoff and erosion, reduction of soil sealing in urban areas) • Measure U3 - River basin wide land use adaptation CROATIA • Encourage selection of technical solutions that will ensure: o Retention of water in the watershed as long as possible and allowing room for watercourses to slow down the runoff o Preservation, restoration and enlargement of areas that can retain flood waters, such as natural water retention areas, wetlands and floodplains

			○ Prevention of pollution of water and soil by harmful substances during flood events in areas reserved for flood water retention by land use restrictions and administrative measures ○ Continue creating lowland retentions in the areas of former floodplains for the purpose of flood flow reductions and flood protection of downstream areas ○ Usage of the existing lowland retention areas for meadows and grazing areas or for restoration of alluvial forests • Identification and preparation of protection and management programmes for floodplains and retention areas that could be used as natural water retention areas • Repair, reconstruction and construction of flood protection systems according to Multiannual programme of construction of water regulation and protection facilities and amelioration facilities (selected projects or project components) SERBIA • Planning and implementation of the erosion protection measures and measures for natural water retention • Implementation of the protective biological and biotechnical works BOSNIA AND HERZEGOVINA • Re-forestation of deforested areas within the catchment • Promotion of measures for natural water retention • Application of anti-erosion measures in the river basins and measures for torrents defence ROMANIA • Maintaining or increasing the proportion of forested area in the upper basins of watercourses (not only APSFR);

			• Maintaining or increasing the area of forests intended for:
			  - hydrological protection;
			  - intended for land and soil protection;
			• Floodplain and riparian woodlands management, including forest protection curtains for dikes
			• Reduction of runoff on the slope through anti-erosion forest curtains (agroforestry systems)
			• Reduction of local slope runoff through earthworks or the use of "surface runoff barriers" (earth waves / small wooden constructions, stone walls, hedgerows)
			• Improvement of lands affected by deep erosion or surface erosion by afforestation - requires supporting works for land stabilization terracing, erosion barriers, etc.
			• Promote and implement best practices in slope agriculture (e. g. cultivation practices for soil conservation)
			• Re-meandering, Restoration of channel and floodplain features (including reforestation of riverbanks for mitigation of erosion phenomena);
			• Leaky barriers (includes large woody structures, leaky weirs and soft engineered features)
			• NWRM - Offline storage areas (In-stream leaky weirs and/or lowered bank tops promote flood spilling, aiming to temporarily store floodwater on floodplain
			• Beach recharge
			
			BULGARIA

			• Restoration of the natural riverbeds, meanders and floodplains • Creation of polders and small buffer basins in the river terraces • Afforestation of the riverbanks and floodplains UKRAINE: • Cleaning of water draining systems, riverbeds and main channels • Elaboration and implementation of floodplain management plans • Application of soil chiseling on amelioration systems
	Water flow regulation	Measures involving physical interventions to regulate flows, such as the construction, modification or removal of water retaining structures (e.g., dams or other on-line storage areas or development of existing flow regulation rules), and which have a significant impact on the hydrological regime.	GERMANY • Planning and construction of flood retention systems • Operation, maintenance and reconstruction of flood retention systems • Conceptions / studies / expertise • Research and development projects and best practice projects • Information and training AUSTRIA • Improvement of retention capacity on catchment scale • Structural protection measures CZECH REPUBLIC • Construction of control structures for inundations • Improvement of existing water structures (raising of storage volume, increasing of discharge capacity, increasing of safety) • Update of operational rules and service regulations for water structure SLOVAKIA • 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 • optimisation of operational rules with respect to flood control and other purposes of reservoirs utilisation HUNGARY • Creating of polders for floods, flash floods and inland water • Operation of polders • Use of mobile protecting constructions • Optimization of reservoir operation • Relocation of dikes (space for the river) • Designation of natural retention areas where applicable SLOVENIA • Measure U7 - Structural flood protection measures • Measure U8 - Individual flood protection measures Measure U9 - Continuous efficiency control of the flood protection measures • Measure U12 - Proper management of flood, water, hydropower and other infrastructure CROATIA • Repair, reconstruction and construction of flood protection systems according to Multiannual programme of construction of water regulation and protection facilities and amelioration facilities (selected projects or project components)

			SERBIA • Planning for the preservation and expansion of existing and the establishment of new retention areas (including necessary retention) • Construction of new and reconstruction of the existing hydraulic structures for the reduction of floods (reservoirs, retention basins including necessary retention, relieve channels) • Scenario development and action plan for localization of flooding (secondary defence line, controlled flooding, etc.) BOSNIA AND HERZEGOVINA • Defining the necessary storage volume and operation regime of the existing retention areas and reservoirs for flood defence • Consideration on construction of new multipurpose reservoirs and retention areas • Promotion of best practices in managing multi-purpose reservoirs • Developing action plans in case of crashing or demolishing dams ROMANIA • Creation of new permanent/non-permanent on-line (in – line) reservoirs • Creation of new off-line reservoirs • Heightening of dams to increase the storage capacity • Increasing the capacity of large spillways in order to increase the discharge capacity • Increasing riverbed transit capacity by resizing bridges • Updating/amending/ optimizing the operation rules of reservoirs in order to increase the attenuation capacity; the coordinated operation of reservoirs in cascade

			• Inter-basins connection channels (flood discharges/water volumes derivation) • Removal of retaining structures (dams' removal) - to be studied in each case. BULGARIA • Constructions for controlled inundation • Use of mobile flood-defence facilities • Efficient management of dams and retention structures • Removal of dangerous and/or inefficient dams and reservoirs MOLDOVA • Operation of water reservoirs UKRAINE • Construction of mountain storage reservoirs • Construction of polders
	Channel, Coastal and Floodplain Works	Measures involving physical interventions in freshwater channels, mountain streams, estuaries, coastal waters and flood-prone areas of land, such as the construction, modification or removal of structures or the alteration of channels, sediment dynamics management, dykes, etc.	GERMANY • Adaption of dikes, dams, flood protection walls, dunes, beach ridges, mobile flood defences • Maintenance measures of static/mobile flood defence systems • Conceptions / studies / expertise • Research and development projects and best practice projects • Information and training AUSTRIA • Development of concepts, plans, projects, strategies on catchment scale to

			improve the water and sediment balance • Flood protection measures • Flood retention measures • Ecologic oriented measures • Measures to reduce hydro morphologic alterations CZECH REPUBLIC • Increasing of river discharge capacity • Construction of flood protection dikes • Construction of mobile walls • Evaluation of possible removal of transversal structures in the rivers (lowering of water level) • Increasing of discharge capacity of bridges, culverts, inundation structures etc.) • Construction of embankment walls • Grading in floodplains SLOVAKIA • 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 water courses – maintenance of river channels and their vegetation, removal of deposits • reconstruction or maintenance of bridges to enhance their capacity during floods HUNGARY • removal of obstacles as debris masses, summer dikes, improperly placed artificial objects • protection of banks against erosion

			SLOVENIA • Measure U7 - Structural flood protection measures • Measure U10 - Water infrastructure maintenance works CROATIA • Repair, reconstruction and construction of flood protection systems according to Multiannual programme of construction of water regulation and protection facilities and amelioration facilities (selected projects or project components) SERBIA • Construction of new and reconstruction of the existing flood protection structures • Construction of mobile flood protection systems • Maintenance of the conveying capacity of the winter bed of the rivers • Rehabilitation works on flood protection and river training structures • Scenario development and action plan for localization of flooding (secondary defence line, controlled flooding, etc.) BOSNIA AND HERZEGOVINA • River training works • Floodplain protection dykes (levies) • Torrent control barriers ROMANIA • Channelling of the river - local interventions (including stabilisation of the river bed)

			• Inventory of hydrotechnical works for the improvement of torrential riverbeds and evaluation of their status/functionality • Rehabilitation of hydrotechnical systems used for the improvement of torrential riverbeds • Consolidation of torrential riverbeds with small hydrotechnical works (up to 5m elevation) • New dikes (along localities) or building second protection lines • Protection dikes for coastal areas • Heightening of the existing embankments • Dikes rehabilitation for operating to their design standards • Assessment of setting back, partial or full removal of flood embankments (to be studied in each case) BULGARIA • Expansion of the "bottlenecks" such as bridges, etc.., which obstruct the river flow. • Heightening and reinforcement of dykes • Terracing; • Reconstruction and maintenance of drainage channels • Maintenance of river-channels and gullies, ensuring adequate flow capacity of the channels of water courses UKRAINE • Increasing of soil-reclamation canals' capacity • Construction of falls and riffles on rivers and channels

			• Riverbed regulation • Construction of protective structures
	Surface Water Management	Measures involving physical interventions to reduce surface water flooding, typically, but not exclusively, in an urban environment, such as enhancing artificial drainage capacities or though sustainable drainage systems (SuDS).	GERMANY • Keeping clear flood discharge cross-sections in settlement area and wetlands • Keeping clear flood discharge cross-sections by maintenance measures and floodplain-management • Conceptions / studies / expertise • Information and training AUSTRIA • Compensation of sealing by increasing infiltration • Rainwater management • Information via hazard indication maps of potential pluvial flooding (surface water runoff) CZECH REPUBLIC • Infiltration structures to catch the rainfall water • Flood protection measures on sewerage system • Construction of retention storages on sewerage system • Creation of complex control systems on sewerage systems • Using of green roofs and rain gardens • Support of rainfall management in the urban areas SLOVAKIA • measures which protect land from inundated „inner waters“ – installations (equipment) for pumping the „inner waters“

			SLOVENIA • Measure U7 - Structural flood protection measures • Measure U10 - Water infrastructure maintenance works SERBIA • Construction of new and reconstruction of the existing publicly owned drainage systems ROMANIA • Enhancing/Rehabilitation of sewage systems, drainage systems, pumping stations (including improvement of the drainage of linear infrastructures: roads, railways, if necessary) • Development and/or adaptation of existing regulations regarding sustainable drainage systems; • Development of guidance publications of good technical practices in the implementation and maintenance of drainage systems • Enhancing artificial drainage capacities through sustainable drainage systems BULGARIA • Protective drainage channels in settlements • Reduction of sealing in urban areas • Management of rivers and channels in urban areas UKRAINE • Increasing of the storm sewage system capacity • Increasing of pumping stations' productivity

	Other Protection	Other measure to enhance protection against flooding, which may include flood defence asset maintenance programmes or policies	GERMANY • Assistance in urban pluvial flood risk management • Information and training AUSTRIA • Maintenance of existing structures • Concepts for river preservation CZECH REPUBLIC • Inspection of the function of existing flood protection measures SLOVAKIA • mobile flood protection barriers SLOVENIA • Measure U8 - Individual flood protection measures CROATIA • Implementation of Programs of regular technical maintenance of watercourses, water domain and water structures in accordance with nature protection conditions. • Monitoring of conditions of flood protection structures and systems. SERBIA • Monitoring and inspection of the condition of flood protection structures • Maintenance of flood protection structures

			• Monitoring and inspection of condition of erosion and torrents protection structures, the erosion processes and condition of torrential flows • Maintenance of erosion and torrents protection structures • Monitoring and inspection of condition of publicly owned drainage systems • Maintenance of publicly owned drainage systems • Monitoring and inspection of condition of watercourses' winter bed • Implementation of flood, ice-jam flood and excess inland water defence according to the General Flood Defence Plan and annual Flood Defence Action Plan for the 1st order watercourses and inland waters • Implementation of flood defence according to the General Flood Defence Plan and annual Flood Defence Action Plan for the 2nd order watercourses • Provision of machinery, equipment and tools for enterprises engaged in the operational implementation of flood defence • Control of the execution of works and measures for breaking the ice by the owners, i.e. users of hydraulic structures and other facilities BOSNIA AND HERZEGOVINA • Monitoring and control of the status of the watercourse for high waters • Regular monitoring, analysis and reporting on the condition of buildings and flood protection systems • Creating and constantly updating maps showing the objects in the flood protection system ROMANIA • Carrying out maintenance works for the safe operation of existing hydraulic structures and related equipment (e.g. maintenance and repairs etc.); • Restoring/Maintaining the attenuation volumes of existing reservoirs/storages (permanent/non-permanent); • Increasing the safety of existing dams, intakes (e.g. retrofitting measures to limit infiltrations, etc.)

			BULGARIA • Annual inspection of the technical and operational conditions of potentially dangerous water objects • Review and update of the regulations for maintenance and operation of small dams in order to guarantee the conduction of high-water wave caused by flash floods UKRAINE • Support of favorable water regime for the water objects • Surface water monitoring • Elaboration and implementation of the programs on development and improvement
Preparedness	Public awareness and preparedness		GERMANY • Publication of flood hazard and risk maps on a local scale • Awareness-raising, preparation for emergency event AUSTRIA • Information, training and participation • Hazard zone planning • River development and risk management concepts SLOVAKIA • Awareness-raising about flood risk, possible flood protection measures, general public input into increasing flood protection at local level SLOVENIA

			• Measure U5 - Flood risk related databases
			• Measure U6 - Raising awareness about flood risk
			
			SERBIA
			• Introduction of flood related topics into curricula
			• Media campaigns and promotions
			• Public availability of flood hazard and flood risk maps via Water Information System
			• Education of the population on the protection of watercourses from the pollution by waste
			
			ROMANIA
			• Improvement of the monitoring systems, forecast models and warning systems (meteorological and hydrological)
			• Improvement of capabilities for detection and monitoring of hydrological dangerous phenomena (torrents, flash floods in small catchments, rapid increase of flows and in urban areas)
			  ○ Supplementary monitoring points of levels and precipitation - automatic stations at bridges or pipeline trespassing
			  ○ Video Surveillance for river flow monitoring and ice jam
			  ○ New sensors generation for real time detection and alarm of thresholds exceedance by rainfall and torrential runoff intensity
			  ○ Upgrade of national meteorological radar network
			  ○ Pluvial monitoring network in urban areas and streets with risk on flooding survey (including flood mark installation) and water in sewerage systems
			  ○ Dyke survey equipment (high resolution data collection cameras and drones connected to GIS, optical cables survey systems, inclinometers humidity survey etc.) and dam survey/monitoring equipment

			• Training and building administrative capacity of human resources (monitoring, forecast, dissemination) • Development/revision of flood defence plans correlated with other associated emergency management plans (Civil Protection Plans); • Updating the Civil Protection Plans: analysis of the population evacuation from the affected areas and the access roads to safe areas, signalling / identification of alternative access routes, resources completion of the rapid intervention centers of NARW and for Civil Protection and local authorities interventions • Annual simulation exercises with the participation of all county institutions with responsibilities in flood risk management, Improving the intervention action and cooperation of the authorities involved in the management of emergency situations • Public information activities on flood risk awareness tailored specific to the needs of the respective communities (including health and hygiene at local level) and on preventive and operational measures to be taken in an emergency situation; production, publication and dissemination of brochures, flyers leaflets, as well as campaigns and communication in the media • Evacuation exercises • Set educational activities on flood risk • Encourage participation on topics related to flood risk BULGARIA • Preparing the population for actions in case of floods
Other			GERMANY • Other measures) • Financial aid program AUSTRIA

		• Information on exposure by natural hazards • Information on options how to cope with flood events • Information on individual emergency management in case of flooding SLOVENIA • Measure U13 - Providing enough financial resources for maintenance works CROATIA • Harmonization of interpretation of water fees as fees for covering costs of resources and costs of water environment and adjustment of water fees with 6-year planning cycle (financing issue) • Improvement to procedures of issuance of nature protection conditions for works of regular maintenance of watercourses, water domain and water structures (administrative issue, to enhance the efficiency of implementation of operation and maintenance measures) • Improvement to integrated water and flood risk management in the aspect of planning of measures of construction and maintenance of flood protection structures and systems through: o Development of a methodology for establishment of ecologic potential of the heavily modified water bodies under the influence of flood protection structures and systems o Establishment of a classification system for the ecologic potential of the heavily modified water bodies under the influence of flood protection structures and systems o Monitoring of conditions of the heavily modified water bodies under the influence of flood protection structures and systems (according to the established classification system) ROMANIA • Ensuring the preparation of human and material resources necessary for the management in good conditions of the emergency situations generated by the floods, including the groups of volunteers to participate in the rescue

		actions - evacuation of the population; endowment with materials and means of intervention at county/local level for Civil protection, NARW and County and local authorities, as well as for all the owners of works with flood defence role. Ensuring material resources is available for dyke protection and enhancement, quality control of drinking water, advice on disinfection of wells and supply of water from alternative sources • Improving the degree of property insurance through mandatory policies and additional/complementary insurances, insurance of public assets, economics activities etc

4 Measures strenghtening resilience

Aspects of flood risk management	Type	Description	Measures by countries
Preparedness	Flood Forecasting and Warning	Measure to establish or enhance a flood forecasting or warning system	GERMANY • Flood information and forecast • Establish/improve local warning systems and information • Research and development projects and best practice projects • Studies in climate change

			AUSTRIA • Implementation of monitoring, forecasting, warning systems CZECH REPUBLIC • Revision and completion of forecast profiles and flood announcement limits • Construction of local warning and notification systems • Improvement of flood forecast • Creation of expert systems to analyse measured data SLOVAKIA • 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 HUNGARY • Renewal of the early warning system SLOVENIA • Measure U4 - Hydrological and meteorological monitoring • Measure U15 - Flood forecasting • Measure U16 - Flood warning CROATIA • Improvement to the system for the flood alert and warning system with the goal of improvement of the efficiency of data transfer procedures. • Continuation of the development of the automatic delivery of meteorological

			data and their systematic dissemination on the internal web pages adjusted to the needs of the water management sector • Harmonization of the flood alert and warning systems in transboundary basins with the neighbouring countries • Modernization of the hydrologic data monitoring network and information systems • Development and implementation of hydrologic flood forecasting models • Harmonization of flood forecasts in transboundary basins with the neighbouring countries SERBIA • Improvement of the system of hydro-meteorological monitoring, forecast and early warning • Improvement of the alerting systems and systems for issuing timely warning to population in flood hazard areas • Improvement of international exchange of meteorological and hydrological data and data on implementation of flood defense BOSNIA AND HERZEGOVINA • Continuous improvement of hydrological and meteorological observation systems and data transmission systems connected with Water Information System (WIS) • Improvement of forecasting and early warning systems • International exchange of meteorological and hydrological data • Encouraging the integration of national forecasting and warning systems notification ROMANIA • Improvement of the monitoring systems, forecast models and warning

			systems (meteorological and hydrological) • Improvement of capabilities for detection and monitoring of hydrological dangerous phenomena (torrents, flash floods in small catchments, rapid increase of flows and in urban areas) - Supplementary monitoring points of levels and precipitation - automatic stations at bridges or pipeline trespasing - Video Surveillance for river flow monitoring and ice jam - New sensors generation for real time detection and alarm of thresholds exceedance by rainfall and torrential runoff intensity - Upgrade of national meteorological radar network - Pluvial monitoring network in urban areas and streets with risk on flooding survey (including flood mark installation) and water in sewerage systems - Dyke survey equipment (high resolution data collection cameras and drones connected to GIS, optical cables survey systems, inclinometers humidity survey etc.) and dam survey/monitoring equipment • Training and building administrative capacity of human resources (monitoring, forecast, dissemination) BULGARIA • Building of early-warning systems addressed to flash floods • Improvement and modernization of the hydro-meteorological monitoring network • Improvement of the existing hydrological information system - real-time transfer of data for the entire river basin MOLDOVA • Improvement of flood forecasting

			UKRAINE • Provision of reliable maintenance of the automated information measuring system • Development and advance of the automated information measuring system • Construction of the new automated measuring stations • Introduction of the modeling systems • Introduction of the notification systems
	Emergency Event Response Planning / Contingency planning	Measure to establish or enhance flood event institutional emergency response planning	GERMANY • Emergency event response planning • Conceptions / studies / expertise • Information and training AUSTRIA • Compilation of emergency management plans • Training of local fire brigades and potentially affected inhabitants CZECH REPUBLIC • Update of flood protection plans (municipalities, companies, building owners, districts, regions) • Update of emergency and crisis plans (municipalities, companies) • Assignment of technical devices and materials for rescue activities during floods • Training and professional support of flood and crisis authorities SLOVAKIA • emergency flood equipment response measures – strengthening flood response capacities, improvement of cooperation between different sectors, institutions and professionals involved in flood management

			SLOVENIA • Measure U14 - Contingency planning (flood event simulation exercises, creation and updating of regional and local emergency response plans for all APSFRs and other flood prone areas, providing additional flood response equipment) CROATIA • Continuation of activities on formal introduction of a special level of protection and maintenance of natural water retention and wetland areas and boundaries of the public water domain in the process of physical planning • Continuation of activities on registration of the public water domain in land registry • Monitoring of conditions on the public water domain SERBIA • Preparation of the emergency protection and rescue plans at all levels of governance • Simulation exercises of response during floods. BOSNIA AND HERZEGOVINA • Preparation, adoption and updating flood defence plans • Continuous data exchange between institutions in charge of flood defence • Strengthening the capacity of professionals and institutions responsible for flood management ROMANIA • Development/revision of flood defence plans correlated with other associated emergency management plans (Civil Protection Plans); • Updating the Civil Protection Plans: analysis of the population evacuation

			from the affected areas and the access roads to safe areas, signalling/identification of alternative access routes, resources completion of the rapid intervention centers of NARW and for Civil Protection and local authorities interventions • Annual simulation exercises with the participation of all county institutions with responsibilities in flood risk management, Improving the intervention action and cooperation of the authorities involved in the management of emergency situations BULGARIA • Establishment of a National Centre for real-time water management • Development and/or update of national regulations on prevention of emergency events and related recovery-activities, addressed to the state administrations, local administrations and business MOLDOVA • Preparation of plans for protection and rescue in emergency situations, including catastrophic floods on the state as well as municipality level. • Improvement of cooperation between different sectors, institutions and professionals involved in flood management UKRAINE • Development and approval of yearly plans on emergency response • Application of plans and solutions by commissions on technological and ecological security and emergency • Confinement plans development
	Public Awareness and Preparedness	Measure to establish or enhance the public awareness or preparedness for flood events	GERMANY • Awareness-raising, preparation for emergency event • Conceptions / studies / expertise • Consulting services

			AUSTRIA • Information, training and participation CZECH REPUBLIC • Publishing of flood protection plans • Raining of individual public preparedness • Marking of flood risk areas on terrain HUNGARY • PR methods and education to increase the awareness of the population • Increase participation of inhabitants in flood prevention activities and concrete flood protection works on dykes during floods SLOVENIA • U5 Flood risk related databases • U6 Raising awareness about flood risk CROATIA • Encourage public participation in the implementation of flood risk management plans and solution of problems caused by global climate changes • Establishment of a system for regular education of the public regarding flood risk management issues, especially in areas under significant flood risks • Continuation of activities on the system for informing the public on the activities and initiatives related to the flood risk management and activities during flood events

			SERBIA • Introduction of flood related topics into curricula • Media campaigns and promotions • Public availability of flood hazard and flood risk maps via Water Information System • Education of the population on the protection of watercourses from the pollution by waste BOSNIA AND HERZEGOVINA • Encouraging interested public to participate in the implementation of the flood risk management plan • Encouraging public education on flood risk management issues • Promoting public information on activities and initiatives related to flood risk management, the state of the flood defence system and activities during floods ROMANIA • Public information activities on flood risk awareness tailored specific to the needs of the respective communities (including health and hygiene at local level) and on preventive and operational measures to be taken in an emergency situation; production, publication and dissemination of brochures, flyers leaflets, as well as campaigns and communication in the media • Evacuation exercises • Set educational activities on flood risk • Encourage participation on topics related to flood risk BULGARIA • Maintenance and update of water registers

			• Provision of updated information in appropriate format to the stakeholders • Training and information campaign MOLDOVA • Informing people about the flood risks through mass-media and local administration and placing warnings on the state hydro-meteorological Station website UKRAINE • Notification of municipalities concerning flood areas • Trainings for authorities and population
	Other preparedness	Other measure to establish or enhance preparedness for flood events to reduce adverse consequences	GERMANY • Insurance, financial precautions • Assistance in urban pluvial flood risk management AUSTRIA • Ensure availability of facilities for emergency SLOVENIA • Measure U1 - Flood hazard and flood risk mapping • Measure U3 - River basin wide land use adaptation • Measure U5 - Flood risk related databases • Measure U6 - Raising awareness about flood risk • Measure U9 - Continuous efficiency control of the flood protection measures • Measure U10 - Water infrastructure maintenance works SERBIA

			• Regular update of the General Flood Defence Plan for the Republic of Serbia • Regular update of the annual Flood Defence Action Plan for the 1st order watercourses and inland waters, for the territory Republic of Serbia • Regular update of the annual Flood Defence Action Plans for the 2nd order watercourses, for the territory of local self-government units • Preparation of annual reports on the status of flood protection structures and of drainage systems and associated equipment, with a proposal of necessary works to maintain their functionality, and on the status of available tools, equipment and materials for flood defence with the proposal of the necessary supplement • Review of criteria for declaring flood defence phases • Bilateral cooperation • Regional cooperation (ICPDR, ISRBC, international projects, trainings, exercises, etc.) • Preparation of bylaw related to a standard content of the annual Flood Defence Action Plans for the 2nd order watercourses • Data and information exchange between institutions responsible for flood defence • Capacity building of experts and institutions responsible for flood defence • Capacity building of local self-government units for participation in flood defence • Information exchange and coordination of flood defence activities during an emergency situation BOSNIA AND HERZEGOVINA • Improving international cooperation in flood management • Capacity building for experts and competent institutions • Exchange of information and coordination of activities during operational flood defences • developing joint protection and rescue plans during floods

			• Equipping specialized flood response units • Encouraging common simulation response exercises during floods ROMANIA • Ensuring the preparation of human and material resources necessary for the management in good conditions of the emergency situations generated by the floods, including the groups of volunteers to participate in the rescue actions - evacuation of the population; endowment with materials and means of intervention at county / local level for Civil Protection, NARW, County and local authorities, as well as for all the owners of works with flood defence role. Ensuring material resources is available for dyke protection and enhancement, quality control of drinking water, advice on disinfection of wells and supply of water from alternative sources • Improving the degree of property insurance through mandatory policies and additional/complementary insurances, insurance of public assets, economics activities etc BULGARIA • Implementation of insurance policies; promotion of flood-oriented insurance products UKRAINE • Determination of potentially dangerous hydro technical structures • Modelling of the possible emergency situations
Recovery and Review	Individual and societal recovery	Clean-up and restoration activities (buildings, infrastructure, etc) Health and mental health supporting actions, incl. managing stress Disaster financial assistance	GERMANY • Assistance with post-flood repair, restoration activities, aftercare planning, elimination of environmental damage • Conceptions / studies / expertise

		(grants, tax), incl. disaster legal assistance, disaster unemployment assistance Temporary or permanent relocation Other	AUSTRIA • Emergency response • Support of affected people via the Catastrophe funds to cover direct damages CZECH REPUBLIC • Assignment of technical devices and material for recovery activities SLOVENIA • Measure U20 - Financial, system, international river basin coordination and other measures SERBIA • Rehabilitation works of importance for flood protection (bridges, culverts, landslides, etc.) BOSNIA AND HERZEGOVINA • Flood damage repair activities • Enforcement of the Law on Rescue of People and Material Property from Natural and Other Disasters ROMANIA • Evacuation of the population from the affected areas, emergency medical assistance • Temporary relocation of the affected population, psychological assistance, as well as financial and legal support BULGARIA • Elimination of pollution during and immediately after the flood-accident • Restoration work on roads, water supply facilities, sewage, power supply

			networks and other type of infrastructure • Restoration work for elimination of local damages on banks, embankments and other protective constructions. MOLDOVA • Assistance with post-flood repair, restoration activities, aftercare planning, elimination of environmental damage UKRAINE • Carrying out the after-flood examination and preparation of inspection certificate about the flood protective structures' technical status of hydrotechnical structures and buildings • Repair works on damaged hydrotechnical structures and buildings
	Environmental recovery	Clean-up and restoration activities (with several sub-topics as mould protection, well-water safety and securing hazardous materials containers) Other	AUSTRIA • Evaluation and repair of damages CZECH REPUBLIC • Financial support of environmental recovery • Preparation of materials for environmental recovery SLOVENIA • Measure U18 - Flood damage assessment • Measure U19 - Post flood event analysis ROMANIA • Emergency and temporary repairs of all types of flood protection infrastructure/hydrotechnical constructions affected by floods to ensure their minimum functionality–financing mechanism of EC (European Union Solidarity Fund (EUSF), state fund)

			• Restoration/Rehabilitation of environment infrastructure (water and sewage water treatment plants, water supply and sewerage networks), flood protection infrastructure, utilities infrastructure (roads, railways, electricity supply and gas networks, etc.), as well as properties affected by floods • State support for the restarting the economic activity in case of a special flood event (low interest credit system) BULGARIA • Elimination of pollution in the water-supply safeguard zones • Stabilization of landslides caused/activated by flooding MOLDOVA • Evaluation and repair of damages UKRAINE • Assessment of damages • Recovery measures identification • Carrying out of recovery works
	Other recovery and review	Lessons learnt from flood events Insurance policies Other	GERMANY • Other recovery and review • Research and development projects and best practice projects AUSTRIA • Flood event documentation and analysis CZECH REPUBLIC • Reports on floods and revision of recommendations • Register of flood damages

			SLOVENIA • Measure U19 - Post flood event analysis SERBIA • Preparation of a flood event study, review of flood management concept and proposal of new developments ROMANIA • Damages inventory and filling in the damages database • Mapping the flood (water level trace) after each event occurs in a reasonable time (a few days – a week) • Analyse the performance / operation of the flood defence during the event • Organization of technical conferences on lessons learned UKRAINE • Analysis of the flood origin • Analysis of the actions during flood
Other			GERMANY • Other measures • Financial aid program AUSTRIA • Relocation and reallocation BOSNIA AND HERZEGOVINA • Documentation and analysis of flood events

		BULGARIA • Study on changes in the ecological status of surface water after flooding • Exchange of knowledge and experience • Recording of flood-events; assessment of the damages UKRAINE • Other measures

5 Awareness raising measures

Aspects of flood risk management	Type	Description	Measures by countries
Preparedness	Public Awareness and Preparedness	Measure to establish or enhance the public awareness or preparedness for flood events	GERMANY • Awareness-raising, preparation for emergency event • Conceptions / studies / expertise • Consulting services AUSTRIA • Information of public in an appropriate way • Improve participation • Educational activities • Implementation of monitoring, forecasting, warning systems • Compilation of emergency management plans

			• Ensure availability of facilities for emergency CZECH REPUBLIC • Raising of public flood risk knowledge • Publishing of information regarding flood protection options SLOVAKIA • presentation of flood hazard and flood risk maps, flood management plans • raising public awareness • training campaigns focused at flood preparedness among municipalities HUNGARY • PR methods and education to increase the awareness of the population • Increase participation of inhabitants in flood prevention activities and concrete flood protection works on dykes during floods SLOVENIA • Measure U1 - Flood hazard and flood risk mapping • Measure U5 - Flood risk related databases • Measure U6 - Raising awareness about flood risk CROATIA • Encourage public participation in the implementation of flood risk management plans and solution of problems caused by global climate changes • Establishment of a system for regular education of the public regarding flood risk management issues, especially in areas under significant flood risks • Continuation of activities on the system for informing the public on the

			activities and initiatives related to the flood risk management and activities during flood events SERBIA • Informing the public through daily bulletins during the flood defence • Introduction of flood related topics into curricula • Media campaigns and promotions • Public availability of flood hazard and flood risk maps via Water Information System • Education of the population on the protection of watercourses from the pollution by waste BOSNIA AND HERZEGOVINA • Public access to flood hazard and flood risk maps • Municipal authorities capacity building and training on data use • Implementation of flood insurance system • Public awareness of flood life strategy • Production of fliers, movies, radio and TV shows ROMANIA • Public information activities on flood risk awareness tailored specific to the needs of the respective communities (including health and hygiene at local level) and on preventive and operational measures to be taken in an emergency situation; production, publication and dissemination of brochures, flyers leaflets, as well as campaigns and communication in the media • Evacuation exercises • Set educational activities on flood risk

			• Encourage participation on topics related to flood risk BULGARIA • Educational activities • Public access to the flood hazard and flood risk maps. Public access to the annual reports on the status and operational conditions of dams and other MOLDOVA • Informing people about the flood risks through mass-media and local administration and placing warnings on the state hydro-meteorological Station website UKRAINE • Notification of municipalities concerning flood areas • Trainings for authorities and population
	Other preparedness	Other measure to establish or enhance preparedness for flood events to reduce adverse consequences	GERMANY • Insurance, financial precautions AUSTRIA • Training of local fire brigades and inhabitants CZECH REPUBLIC • Flood exercises for flood and crisis authorities BOSNIA AND HERZEGOVINA

			• Municipal capacity building related to flood defences ROMANIA • Ensuring the preparation of human and material resources necessary for the management in good conditions of the emergency situations generated by the floods, including the groups of volunteers to participate in the rescue actions - evacuation of the population; endowment with materials and means of intervention at county/local level for Civil protection, NARW, County and local authorities, as well as for all the owners of works with flood defence role. Ensuring material resources is available for dyke protection and enhancement, quality control of drinking water, advice on disinfection of wells and supply of water from alternative sources • Improving the degree of property insurance through mandatory policies and additional/complementary insurances, insurance of public assets, economics activities etc MOLDOVA • Continuous data exchange between institutions in charge of flood defence
Prevention/Protection			AUSTRIA • Compilation and update of hazard zone plans • Incorporation of hazard zone plans • Compilation and incorporation of local and regional land use planning strategies • Structural protection measures • Object oriented measures • Relocation and reallocation • Definition of operating instructions for flood prone and flood influencing facilities SLOVENIA

		• Measure U1 - Flood hazard and flood risk mapping • Measure U5 - Flood risk related databases BOSNIA AND HERZEGOVINA • Introducing water management and flood protection issues at all levels of education • Informing the population in floodplains of the necessity of establishing flood insurance ROMANIA • Preparation of studies to improve knowledge on flood risk management: - start a national programme to delineate flood zones by hydraulic modelling for the whole territory of Romania (and not just for APSFR) - improved statistical analysis, effect of climate change - development of new hydrological data sets to support the hydrological and hydraulic modelling - flood vulnerability assessment, flood risk mapping,; - studies and analysis of environmental, economic and social viability of structural actions; completion of a WFD, Habitats Directive, Birds Directive Compliance Assessment and coordination with EU strategies (EU Biodiversity Strategy for 2030, EU Strategy on Green Infrastructure • Enhancing flood management policies/strategies/legislative framework • Maintenance of riverbeds • Carrying out maintenance works for the safe operation of existing hydraulic structures and related equipment (e.g. maintenance and repairs etc.) • Restoring/Maintaining the attenuation volumes of existing reservoirs/storages (permanent/non-permanent) • Increasing the safety of existing dams, intakes (e.g. retrofitting measures to limit infiltrations, etc.)

		UKRAINE • Determination of potentially dangerous hydrotechnical structures • Modeling of the possible emergency situations
Other		GERMANY • Financial aid program

6 Measures implementing the solidarity principle

Aspects of flood risk management	Type	Description	Measures by	Actions taken to avoid negative downstream effects
Protection	Natural flood management / runoff and catchment management	Measures to reduce the flow into natural or artificial drainage systems, such as overland flow interceptors and / or storage, enhancement of infiltration, etc and including in-channel , floodplain works and the reforestation of banks, that restore natural systems to help slow flow and store water.	GERMANY • Natural water retention in the catchment • Natural water retention in wetlands • Reduction of sealing • Natural water retention in settlement area • Recovery of floodplains • Conceptions / studies / expertise • Research and development projects and best practice projects • Information and training	GERMANY In Federal Water Act (WHG) it is codified, that no measures shall be taken within a river basin which significantly increase the risk of flooding upstream or downstream: - § 5: Obligation of general diligence: Where activities can have an impact on a waterbody, everyone shall be obliged to exercise all dure required caution under the circumstances in order to 1. avoid adverse impacts on water properties, .. 3. preserve the vitality of natural water resources and 4. prevent the increase and acceleration of water run-off. - § 67 Principle on river development and construction of dykes, dams and coastal

			AUSTRIA • Restoration of flood plains and sedimentation areas • Implementation of natural water retention measures • Implementation of bi- and multilateral projects and measures for transboundary or bordering rivers • Analysis of up and downstream effects and coordination if compensation is needed • Definition of operating instructions for flood prone and flood influencing facilities CZECH REPUBLIC • Land use change (grassing, afforestation) • Raising of hydric function of forest SLOVENIA • Measure U20 - Financial, system, international river basin coordination and other measures (bilateral water management commissions) • Measure U3 - River basin wide land use adaptation ROMANIA	protection structures: Water bodies shall be developed in such a way that natural floodplains are preserved, the natural water run-off is not influenced significantly, species and biocoenoses typical for specific ecosystems are protected and any other negative impacts on the water properties are prevented. Otherwise compensation measures shall be taken. - § 68: plan approval procedure, planning license Planning approval shall only be granted, if 1. an impairment of the public interest is not to be expected, especially with regard to a considerable and permanent increase in flood risks that cannot be compensated or the destruction of natural flood retention areas, especially in riparian forests. § 77: Natural retention areas Natural floodplains shall be maintained. Former floodplains shall be restored as far as possible.

			• Maintaining or increasing the proportion of forested area in the upper basins of watercourses (not only APSFR); • Maintaining or increasing the area of forests intended for: - hydrological protection; - intended for land and soil protection; • Floodplain and riparian woodlands management, including forest protection curtains for dikes • Reduction of runoff on the slope through anti-erosion forest curtains (agroforestry systems) • Reduction of local slope runoff through earthworks or the use of "surface runoff barriers" (earth waves / small wooden constructions, stone walls, hedgerows) • Improvement of lands affected by deep erosion or surface erosion by afforestation - requires supporting works for land stabilization terracing, erosion barriers, etc. • Promote and implement best practices in slope agriculture (e. g. cultivation practices for soil conservation) • Re-meandering, Restoration of channel and floodplain features (including reforestation of riverbanks for mitigation of erosion phenomena);	

			• Leaky barriers (includes large woody structures, leaky weirs and soft engineered features) • NWRM - Offline storage areas (In-stream leaky weirs and/or lowered bank tops promote flood spilling, aiming to temporarily store floodwater on floodplain • Beach recharge BULGARIA • Prohibition on felling of natural forest vegetation on the riverbanks and river islands • Creation of water retention areas; restoration of wetlands; UKRAINE • Elaboration and agreement of the common measures on decreasing of the flood negative effect	
	Water flow regulation	Measures involving physical interventions to regulate flows, such as the construction, modification or removal of water retaining structures (e.g., dams or other on-line storage areas or development of existing flow regulation rules), and which have a significant impact on the hydrological regime.	GERMANY • Planning and construction of flood retention systems • Operation, maintenance and reconstruction of flood defence systems • Conceptions / studies / expertise • Research and development projects and best practice projects • Information and training	GERMANY In Federal Water Act (WHG) it is codified, that no measures shall be taken within a river basin which significantly increase the risk of flooding upstream or downstream: - § 68: see above - § 75: Flood risk management plans (4): Flood risk management plans shall not include measures which, by their extent and impact, significantly increase flood risks in other countries

			AUSTRIA • Improvement of retention capacity on catchment scale • Structural protection measures • Water retention measures CZECH REPUBLIC • Construction of dry reservoirs • Construction of water reservoirs HUNGARY • Adjusting the design flood levels on border rivers. SLOVENIA • Measure U7 - Structural flood protection measures (coordination with the downstream or upstream countries) • U2 Natural water retention measures (coordination with the downstream or upstream countries) • Measure U20 - Financial, system, international river basin coordination and other measures (bilateral water management commissions) ROMANIA • Creation of new permanent / non-	

			permanent on-line (in – line) reservoirs • Creation of new off-line reservoirs • Heightening of dams to increase the storage capacity • Increasing the capacity of large spillways in order to increase the discharge capacity • Increasing riverbed transit capacity by resizing bridges • Updating / amending/ optimizing the operation rules of reservoirs in order to increase the attenuation capacity; the coordinated operation of reservoirs in cascade • Inter-basins connection channels (flood discharges/water volumes derivation) • Removal of retaining structures (dams' removal) - to be studied in each case. UKRAINE • Agreement of the design flood levels on the boundary sections	
	Channel, Coastal and Floodplain Works	Measures involving physical interventions in freshwater channels, mountain streams, estuaries, coastal waters and flood-prone areas of land, such as the construction, modification or removal of structures or the alteration of channels, sediment	GERMANY • Dikes, dams, flood protection walls, dunes, beach ridges, mobile flood defences • Maintenance measures of static/mobile flood defence systems	GERMANY In Federal Water Act (WHG) it is codified, that no measures shall be taken within a river basin which significantly increase the risk of flooding upstream or downstream: § 67: see above § 68: see above

		dynamics management, dykes, etc.	• Conceptions / studies / expertise • Research and development projects and best practice projects • Information and training AUSTRIA • Development of concepts, plans, projects, strategies on catchment scale to improve the water and sediment balance CZECH REPUBLIC • Relocation of river dikes (make more space to rivers) • Construction of diversion and lateral channels SLOVENIA • Measure U7 - Structural flood protection measures (coordination with the downstream or upstream countries) • U2 Natural water retention measures (coordination with the downstream or upstream countries) • Measure U20 - Financial, system, international river basin coordination and other measures (bilateral water management commissions) ROMANIA	

			• Channelling of the river - local interventions (incl. stabilisation of the riverbed) • Inventory of hydrotechnical works for the improvement of torrential riverbeds and evaluation of their status / functionality • Rehabilitation of hydrotechnical systems used for the improvement of torrential riverbeds • Consolidation of torrential riverbeds with small hydrotechnical works (up to 5 m elevation) • New dikes (along localities) or building second protection lines • Protection dikes for coastal areas • Heightening of the existing embankments • Dikes rehabilitation for operating to their design standards • Assessment of setting back, partial or full removal of flood embankments (to be studied in each case) UKRAINE • Agreement of the working projects and construction works for protective structures on the boundary territories	

	Surface Water Management	Measures involving physical interventions to reduce surface water flooding, typically, but not exclusively, in an urban environment, such as enhancing artificial drainage capacities or though sustainable drainage systems (SuDS).	GERMANY • Keeping clear flood discharge cross-sections in settlement area and wetlands • Keeping clear flood discharge cross-sections by maintenance measures and floodplain-management • Conceptions / studies / expertise • Information and training AUSTRIA • Water retention measures • Water infiltration measures • Information, training and awareness raising CZECH REPUBLIC • Infiltration structures to catch the rainfall water ROMANIA • Enhancing/Rehabilitation of sewage systems, drainage systems, pumping stations (including improvement of the drainage of linear infrastructures: roads, railways, if necessary) • Development and/or adaptation of existing regulations regarding	GERMANY In Federal Water Act (WHG) it is codified, that no measures shall be taken within a river basin which significantly increase the risk of flooding upstream or downstream: § 77: see above

			sustainable drainage systems; • Development of guidance publications of good technical practices in the implementation and maintenance of drainage systems • Enhancing artificial drainage capacities through sustainable drainage systems; •	
	Other Protection	Other measure to enhance protection against flooding, which may include flood defence asset maintenance programmes or policies	GERMANY • Other measures of protection • Information and training AUSTRIA • Restoration of flood plains and sedimentation areas • Definition of operating instructions for flood prone and flood influencing facilities • Improvement of retention capacity on catchment scale • Structural protection measures • Development of concepts, plans, projects, strategies on catchment scale to improve the water and sediment balance HUNGARY • Trans boundary cooperation with the neighbouring countries • Participation in international	

			cooperation I • Participation in international projects, researches • Renewing the existing international flood management contracts (e.g. ice breaking) ROMANIA • Carrying out maintenance works for the safe operation of existing hydraulic structures and related equipment (e.g. maintenance and repairs etc.) • Restoring/Maintaining the attenuation volumes of existing reservoirs/storages (permanent/non-permanent) • Increasing the safety of existing dams, intakes (e.g. retrofitting measures to limit infiltrations, etc.) UKRAINE • Agreement of the other measures in the frame of transboundary cooperation	
Preparedness				
	Emergency Event Response Planning / Contingency planning	Measure to establish or enhance flood event institutional emergency response planning	GERMANY • Emergence event response planning • Conceptions / studies / expertise • Information and training	GERMANY In Federal Water Act (WHG) it is codified, that no measures shall be taken within a river basin which significantly increase the risk of flooding upstream or downstream § 5: see above

			AUSTRIA • Compilation of emergency management plans CZECH REPUBLIC • Construction and upgrade of rainfall and gauging stations with data transfer online SLOVAKIA • strengthening of operational cooperation among the emergency response authorities in the international Danube basin, improvement of interoperability SLOVENIA • Measure U14 - Contingency planning (common flood simulation exercises with the upstream or downstream countries) ROMANIA • Development / revision of flood defence plans correlated with other associated emergency management plans (Civil Protection Plans); • Updating the Civil Protection Plans: analysis of the population evacuation from the affected areas and the access roads to safe areas,	SLOVAKIA In Slovak Act No. 7/2010 Coll. on Flood protection in § 14 the process of providing information on hydrological situation on transnational rivers and the process on providing international help are codified.

			signalling / identification of alternative access routes, resources completion of the rapid intervention centers of NARW and for Civil protection and local authorities interventions • Annual simulation exercises with the participation of all county institutions with responsibilities in flood risk management, Improving the intervention action and cooperation of the authorities involved in the management of emergency situations BULGARIA • Establishment of a mechanism for cooperation and coordination of flood-related activities in border areas UKRAINE • Elaboration of the joint plans of action during floods and confinement plans	
	Public Awareness and Preparedness	Measure to establish or enhance the public awareness or preparedness for flood events	GERMANY • Awareness-raising, preparation for emergency event • Conceptions / studies / expertise • Consulting services AUSTRIA • Information of public in an	GERMANY In Federal Water Act (WHG) it is codified, that no measures shall be taken within a river basin which significantly increase the risk of flooding upstream or downstream: § 5: see above

			appropriate way • Improve participation • Educational activities • Implementation of monitoring, forecasting, warning systems • Compilation of emergency plans • Ensure availability of facilities for emergency CZECH REPUBLIC • Update of documentations of special floods below water reservoirs SLOVAKIA • 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 SLOVENIA • Measure U5 - Flood risk related databases (common flood related data databases) • Measure U6 - Raising awareness about flood risk ROMANIA	SLOVAKIA In Slovak Act No. 7/2010 Coll. on Flood protection in § 14 the process of providing information on hydrological situation on transnational rivers and the process on providing international help are codified.

			• Public information activities on flood risk awareness tailored specific to the needs of the respective communities (including health and hygiene at local level) and on preventive and operational measures to be taken in an emergency situation; production, publication and dissemination of brochures, flyers leaflets, as well as campaigns and communication in the media • Evacuation exercises • Set educational activities on flood risk • Encourage participation on topics related to flood risk BULGARIA • Informing the people and local administrations downstream the river as well as the neighbouring countries about the hydrological conditions and flood event MOLDOVA • Informing people about the flood risks through mass-media and local administration and placing warnings on the state hydro-meteorological Station website UKRAINE	

			• Experience exchange • Trainings for population	
	Other preparedness	Other measure to establish or enhance preparedness for flood events to reduce adverse consequences	GERMANY • Insurance, financial precautions AUSTRIA • Information and training ROMANIA • Ensuring the preparation of human and material resources necessary for the management in good conditions of the emergency situations generated by the floods, including the groups of volunteers to participate in the rescue actions - evacuation of the population; endowment with materials and means of intervention at county/local level for Civil protection, NARW, County and local authorities, as well as for all the owners of works with flood defence role. Ensuring material resources is available for dyke protection and enhancement, quality control of drinking water, advice on disinfection of wells and supply of water from alternative sources • Improving the degree of property insurance through mandatory policies and additional/complementary insurances, insurance of public	

			assets, economics activities etc UKRAINE • Other common measures	
Recovery and Review	Individual and societal recovery	Clean-up and restoration activities (buildings, infrastructure, etc) Health and mental health supporting actions, incl. managing stress Disaster financial assistance (grants, tax), incl. disaster legal assistance, disaster unemployment assistance Temporary or permanent relocation Other	GERMANY • Assistance with post-flood repair, restoration activities, aftercare planning, elimination of environmental damage • Conceptions / studies / expertise AUSTRIA • Emergency response CZECH REPUBLIC • Financial support of recovery of flood damaged areas SLOVENIA • Measure U19 - Post flood event analysis SERBIA • Health and psychological support to the population • Post-flood repair and state aid ROMANIA	GERMANY In Federal Water Act (WHG) it is codified, that no measures shall be taken within a river basin which significantly increase the risk of flooding upstream or downstream: § 5: see above

			• Evacuation of the population from the affected areas, emergency medical assistance • Temporary relocation of the affected population, psychological assistance, as well as financial and legal support BULGARIA • Elimination of pollution during and immediately after the flood-accident UKRAINE • Mutual assistance during the recovery works fulfillment	
	Environmental recovery	Clean-up and restoration activities (with several sub-topics as mould protection, well-water safety and securing hazardous materials containers) Other	AUSTRIA • Evaluation and repair of damages ROMANIA • Emergency and temporary repairs of all types of flood protection infrastructure / hydrotechnical constructions affected by floods to ensure their minimum functionality – financing mechanism of EC (European Union Solidarity Fund (EUSF), state fund) • Restoration/Rehabilitation of environment infrastructure (water and sewage water treatment plants, water supply and sewerage networks), flood protection infrastructure, utilities infrastructure	

			(roads, railways, electricity supply and gas networks, etc.), as well as properties affected by floods State support for the restarting the economic activity in case of a special flood event (low interest credit system) UKRAINE Common risks and damages assessment	
	Other recovery and review	Lessons learnt from flood events Insurance policies Other	GERMANY • Other recovery and review • Research and development projects and best practice projects AUSTRIA • Flood event documentation and analysis CZECH REPUBLIC • Lessons learnt from past flood events and application of findings SLOVENIA • Measure U19 - Post flood event analysis ROMANIA • Damages inventory and filling in the damages database • Mapping the flood (water level trace) after each event occurs in a reasonable time (a few days – a week) • Analyse the performance/operation	

			of the flood defence during the event • Organization of technical conferences on lessons learned BULGARIA • Transboundary exchange of experience and data about flood-events, incl. ”lessons learnt” UKRAINE • Other measures	
Other			GERMANY • Financial aid program ROMANIA • Preparation of studies to improve knowledge on flood risk management: - start a national programme to delineate flood zones by hydraulic modelling for the whole territory of Romania (and not just for APSFR) - improved statistical analysis, effect of climate change - development of new hydrological data sets to support the hydrological and hydraulic modelling - flood vulnerability assessment, flood risk mapping - studies and analysis of environmental, economic and social viability of structural actions; completion of a WFD, Habitats	

		Directive, Birds Directive Compliance Assessment and coordination with EU strategies (EU Biodiversity Strategy for 2030, EU Strategy on Green Infrastructure • Enhancing flood management policies/strategies/legislative framework • Maintenance of riverbeds	

7 List of transboundary projects supporting DFRMP

The projects or project proposals/ideas presented here were developed by the ICPDR and/or EUSDR PA5[1] and they shall i.a.:

- Reflect the objectives and priorities set in this Danube Flood Risk Management Plan;
- Have a transboundary character;
- Help to implement the needs listed i.a.in this Annex.

There is no ranking or prioritization of these projects, they are all considered as supportive to the implementation of the Danube Flood Risk Management Plan.

7.1 Danube Sediment Project

One of the main goals of the proposed project was to establish for the first time a Danube river basin sediment budget, identify reaches with surplus and deficit, river bed aggradation and degradation, sediment-related problems in flood risk management, drinking water production, hydropower generation, navigation, water quality and ecology, as well as gain knowledge and better understanding of sediment transport and morphodynamic processes in the Danube River.

The specific aims of the Danube Sediment Project were the following:

- Collect existing sediment data and analyse their quality
- Perform limited sediment transport monitoring at short but important reaches with significant data gaps
- Perform limited sediment transport monitoring and modelling in Pilot Reaches
- Identify the sediment quantity related issues at different space and time scale
- Identify reaches with sediment deficits and surplus and quantify the trends
- Quantify the role of major tributaries in the sediment transport of Danube River
- Develop a sediment balance for the whole Danube River and the input of major tributaries
- Discuss with stakeholders the sediment management problems and options associated with sediment transport
- Summarize and evaluate existing sediment management options
- Risk analysis related to sediment quantity
- Improve the knowledge on sediment transport mechanisms in Danube River
- Prepare a Danube Sediment Management Concept
- Policy recommendations

Detailed description of the project outcomes is provided in the DFRMP chapter 5.5.6.1

[1] Letters of recommendation are critically important pieces of every project. Letter of Recommendation and Letter of Merit from EUSDR PA5, please visit the: https://environmentalrisks.danube-region.eu/projects/pa5-letter-of-recommendation-lor/

7.2 Danube Floodplain project

Overall objective of the proposed project is to reduce the flood risk through floodplain restoration along the Danube and other DRB rivers
The specific objectives include the following:

- to develop a common approach on restoring the water storage capacity of floodplains, from upstream to downstream sections;
- to develop best practice on using 'green infrastructure' for sustainable flood risk management in the Danube River Basin;
- to contribute to the more effective implementation of the EU WFD and Floods Directive with their Programmes of Measures;
- integrating the requirements and opportunities related to other EU policies, notably the Nature Directives, Biodiversity and Climate policy, and of the 2020 Strategy;
- to foster cooperation among Danube Basin countries in using restored floodplains for flood management;
- to demonstrate the feasibility of integrated flood management, including a combination of classical and “green infrastructure” in selected floodplain areas;
- to stimulate stakeholder involvement and cooperation in floodplain restoration / flood management planning and implementation.

Detailed description of the project outcomes is provided in the DFRMP chapters 5.5.6.2 and 6.3.3

7.3 "DANICE" project

The intention of the DANube river basin ICE conveyance investigation and icy flood management project was to focus on:

- Report of recorded ice floods /events in the Danube basin
- Creating a database of registered ice observations and GIS-based map summary in the Danube basin
- Hydrologic and hydraulic investigation on the ice observation, conveyance and forecasting
- Discretization of stretches (Danube and tributaries), structures and certain sections that are frequently exposed to “freezing hazard”
- Listing monitoring stations, well placed observation points, webcams etc. that are suitable for tracing ice conveyance and ice coverage development along the river and its tributaries
- Definition of efficient observation methodology of floating ice plate conveyance on the Danube (e.g. satellite images), suggestions of monitoring development
- Setup of an online international tracking site for ice transport,
- Identification of 1D and 2D modelling capabilities of ice conveyance calculations, listing and evaluation of tools’ capabilities
- Evaluation of different measures to open ice barriers or avoid their development,
- Measures and pilot areas

- Summarizing the ice breaker fleet in the Danube basin (synergies could be noticed with Newada and Newada Duo project, FAIRway), evaluation of international agreements
- Definition of good practices to avoid ice jams

DTP SMF did not provide funding for project preparation. Intention was to submit the project proposal for the 3rd DTP Call but finally there was no activity made in this respect. The FP EG together with the EUSDR PA5 will further explore the possibilities of project funding in the next management cycle.

7.4 "LAREDAR" project

Hazard and risk mapping, risk management planning of the LAkes and REservoirs in the DAnube River basin shall focus on:

- Inventory of potential flood-problematic lakes and reservoirs (L&R), realization of problems, GIS database and bed geometry data with supplying rivers (sub-catchments)
- Hydrologic assessment of the events that cause inundation around the lake or failure of defence system
- Hazard and risk mapping of the L&R, risk management strategies for L&R
- International consequences and conditions in the operation, good practice or agreements for the future

DTP SMF did not provide funding for project preparation. The project proposal was submitted to the 3rd DTP Call, but the submission failed because of an internet failure during the project proposal upload. A revised project proposal was discussed at the Tisza Group meeting on 13 May 2021 and it is being prepared for the future DTP call.

7.5 Coca-Cola - WWF "Partnership for a living Danube"

The
WWF, the Coca-Cola Foundation and Coca-Cola System have been working together in a seven years partnership to restore vital wetlands, river sections and floodplains along the Danube River and its selected tributaries by the year 2020, and to promote the wise use of freshwater resources in the Danube Basin.
The partnership was officially launched in the frame of the 12th Standing Working Group Meeting in Sofia in June 2014. The ICPDR is an observer in the Steering Group of the Partnership. The Partnership is working closely with local stakeholders and relevant authorities to connect river stretches, side-branches or other floodplain areas to the river system by mainly opening rock fill dams, installing or modernising sluices for water retention, improving water supply channels or building fish-pass. At the same time, a regional movement is being created for wetland conservation and restoration, as well as good water stewardship.
There are two larger focus areas: the Lower Danube Green Corridor (RO and BG) and the Mura-Drava-Danube Trans-Boundary Biosphere Reserve (Croatia, Hungary and Serbia) as well as soda lakes in Austria.

The regional programme includes nine restoration projects in six countries: Hungary, Croatia, Serbia, Romania, Bulgaria and Austria. Five projects have been completed by May 2020, and another four are in various stages of development. 120 km river connectivity in Bulgaria and over ca. 4300 hectares of wetlands have been restored or water supply improved to date, including Siroki Rit in Serbia, the Barcs-Old-Drava oxbow in Hungary, Neusiedler See in Austria and Persina and Kalimok wetlands in Bulgaria. Four river and wetland restoration projects are either in their planning or implementation phase in Croatia (6 Drava River side-arms), Hungary (Lankoc floodplain forest along the Drava River), Romania (Garla Mare and Vrata on the Lower Danube). Despite the fact that one project will need a deadline extension from EU LIFE, progress is mainly on track to achieve the 5,237 ha and 12 million m^3 water retention objectives by the end of 2020, however in case of at least one project, due to COVID-19 pandemic situation most probably there will be a delay with implementation of the field works. In a number of cases, financial support from the Coca-Cola Foundation is being used to leverage and secure co-finance support from other sources, mainly EU LIFE funds.
Progress has also been made towards the communication and mobilisation objectives for the Partnership. The “Living Danube Tour”, an interactive mobile exhibit on the value of wetlands, had 71 stops in the region from the start of the regional programme. It has directly involved at least 90,000 people (target of 60,000 by 2020) and reached over 9,5 million people via traditional and social media. Since June 2019, the Freshwater related communication on regional level generated additional ca. 400 000 indirect reach through media, social media, articles and websites. The partnership has also produced a series of Living Danube videos about the Partnership’s restoration activities in the last six years. More information can be found under the following weblink panda.org/living_danube and in the ANNEX 5.

7.6 Improvement of flood forecasting

Implementation step I: Inventory on the available data, information and exchange mechanism, designation of data needs by the national flood forecasting institutions and transnational instruments. Possible solutions are to create and operate national, bilateral, multilateral data exchange platforms for the national forecasting services of the Danube Region to provide them with the necessary data/information to improve their flood forecasting capabilities, taking into account the existing mechanisms and systems.

Implementation step II: Launch a research programme to improve the flood forecasting models by:

- Comparing the efficiency, accuracy, lead time etc. of the existing national, regional and Danube basin wide models
- Exchanging information on the national and trans-national Danube Basin forecasting models for better understanding of their outputs
- Further developing the national models or developing international models (like the Dráva-Mura forecasting model or the European Flood Awareness System)
- sharing models and/or methods

The above-mentioned activities have been addressed in the frame of the DAREFFORT project. Detailed description of the project outcomes is provided in the DFRMP chapter 5.5.6.3

7.7 Information exchange on the operation of hydraulic structures

Flood forecasting and flood management need real time information and data on the operation of flow control structures. Pre-emptying the reservoirs of holding back water to fill up the reservoirs influence the precision of the flood forecasting and can endanger the flood management of the downstream stretches.
Implementation steps: The goal is to agree with the Danube countries and the operators of flow control structure to make their operational rules and real time data available for the national flood forecasting institutes and for the flood management organisations.
Elements of the cooperation have to:

- Identify relevant structures
- Make the real-time operational parameters available to forecasters,
- Make the operational rules (operational manuals) of the flow control structures available for flood forecasters and flood managers,
- Establish procedures and ICT infrastructure to warn flood forecasters when the pre-emptying or filling up of the reservoirs start (e.g. changes in discharge),
- Develop cooperation among the operators and flood managers to ensure that flood protection has got priority in the operation of flow control structures in peak periods (e.g. flood managers shall have the possibility to ask the operators to change the operational state if flood situation requires it),
- Prepare a unilateral framework agreement based on previous steps for the Danube Basin.

These activities were planned to be covered in the frame of the LAREDAR project. The project proposal was submitted to the 3rd DTP Call, but the submission failed because of an internet failure during the project proposal upload. A revised LAREDAR project proposal was discussed at the Tisza Group meeting on 13 May 2021 and it is being prepared for the future DTP call.

7.8 Coordination of operative flood management plans

Coordination in operative flood management is increasingly important with more floods affecting multiple countries and exceeding peak historical levels in the last years.
One of the outcomes of the Flood Survey conducted by the coordination of EUSDR PA5 after the extreme floods on the Danube River in 2013/14 was the need to harmonize/coordinate Operative Flood Management Plans (OFMPs) along the Danube. That is why one of the measures of the Danube Region Operative Flood Management and Cooperation Programme (DR Oper & Cooper) – included also in the DFRMP adopted by the ICPDR and all the14 Danube countries – is to coordinate the operative flood management and civil protection plans in the Danube Basin. This includes the evacuation plans and procedures, safeguarding people, goods, emergency rescue plans, etc. considering the benefits of the civil protection

mechanisms for the shared flood basins or stretches of common interest to better use the available resources.
An international workshop was organized by the EUSDR PA5 Hungarian co-coordination on the 27 November 2019 in Pécs, and a summary Study[2] was published in 2020. The aim of the workshop was to exchange information about the best intervention practices and to review flood protection equipment, materials, resources and sets available in case of an emergency situation.
Coordination of operative flood management plans was incorporated into the REVITAL I, DANICE, and MUNICIP-AID projects. More detailed information about the progress is available in the respective paragraphs below and in the DFRMP chapter 5.5.6.4.

7.9 Development of elements of flood risk management plans for trans-boundary sub-units of common interest

Implementation steps: Provide sub-units that need further support to meet the EUFD deadline on FRMP with resources and pilot projects developed under this Measure. Support the monitoring of the implementation and the review of the plan with planning the next FRMP for the sub-basin
These activities are covered by the MUNICIP-AID project. More detailed information about the progress is available in the respective paragraph below.

7.10 Exchange of flood protection techniques, technologies and experiences

For the last decade a proliferation of new flood protection techniques and technologies could be seen. Some countries use mobile dams, some use mobile walls, some others prefer inflatable dams etc. The floods of the recent decade provided the opportunity to learn about advantages and/or disadvantages of these structures.
Proposal: collect and exchange information of the new equipment both from design and operational point of view. This can be done through a networking project by organising workshops and or seminars.
These activities are covered by the MUNICIP-AID project. More detailed information about the progress is available in the respective paragraph below.

7.11 Develop an education/training network

Proposal: Develop an education/training network of universities/training centres to “train trainers” and develop curricula for training of flood managers.
Agreement on flood protection education
In 2016, with the coordination of the Danube Region Strategy (EUSDR PA5) the National University of Public Service Hungary signed a Collaboration Framework Agreement with German, Slovakian and Serbian universities in order to develop an international curriculum on flood protection engineering as the core of the proposed education network.
International Workshop for Flood Protection Education Network in the Danube River Basin

[2] https://environmentalrisks.danube-region.eu/wp-content/uploads/sites/7/sites/7/2020/04/Study-on-operative-flood-management-plus.pdf

Ministry of Foreign Affairs and Trade of Hungary, Priority Area 5 (PA5 – Environmental Risks) of the European Union Strategy for the Danube Region (EUSDR) and the National University of Public Service of Hungary organize a workshop on flood protection education. The workshop was held on the International Danube Day, on 29 June 2017 in Budapest as an event of the Hungarian Presidency of the Danube Region Strategy.

InterFloodCourse

The development an education network followed up by the InterFloodCourse project. More detailed information about the progress is available in the respective paragraph below.

International Water Governance and Water Diplomacy

The University of Public Service of Hungary launches a Master of Arts programme in International Water Governance and Water Diplomacy for the academic years of 2020. The two-year MA programme in International Water Governance and Water Diplomacy, started September 2020, offers up-to-date, practice-oriented education for practicing and future water managers, diplomats, national and international civil servants engaged in transboundary or global environmental issues. Based on a blend of natural and social sciences, extensive field training and project-based teamwork, the programme is aimed to enable students to master complex water policy challenges, decision and conflict situations. The EUSDR PA5 Hungarian co-coordination and the Ministry of Foreign Affairs and Trade supported the new educational program.

7.12 Enhance coordination of operative flood protection methods and equipment

For risks that are common to a large number of countries in the region (i.e. floods) it is important to strengthen cross-border cooperation. To ensure that civil protection authorities have a good understanding of each other's systems. For instance, available assets and potential gaps, working procedures, and that teams can also function smoothly in case of major emergencies involving bilateral, European, or international response. This measure will be developed also in close collaboration with the envisaged voluntary pool of European assets for disaster risk management as foreseen by the EU´s Civil Protection mechanism. The further and thematic involvement of the disaster risk management in the Danube region will be managed according to the EUSDR PA5 Disaster Management Working Group.

Task 1: Coordination of the regional disaster risk assessment / damage data recording methods and measures, taking into account the specific effects of the climate change phenomena in the region, for better disaster prevention.

Task 2: Build advanced training and appropriate capacity of the flood rescue teams and civil protection operative units

As part of the implementation of DFRMP, PA5 supported the development of flood protection training network by development of creating an e-learning material focusing on floods and organizing a large-scale flood protection training and response exercise (DAREX) and an international operative flood management workshop. The EUSDR PA5 Disaster Management Working Group was established in 2019 in order to concentrate on emergency response and preparedness elements of managing environmental risks.

Task 3: Establishment of the cooperation forum of the Danube basin municipalities and/or relevant institutions for better preparedness, awareness and data sharing during flood related interventions and other regional disasters.

These activities are covered by the MUNICIP-AID project. More detailed information about the progress is available in the respective paragraph below and in the DFRMP chapter 5.5.6.6.

7.13 Analysis of catchment reaction on different precipitation scenarios in the upper Danube including identification of retention sites

The 2013 flood event in the Danube catchment evidenced the importance of flood storage polder. Therefore, the Bavarian flood protection strategy focusses on natural and technical retention in the river catchments. The main objectives of this study of the upper Danube / Inn River catchment are:

- Identification of new retention sites in the whole Inn River catchment
- Analysis of the retention potential of the current barrages along the Inn River -> barrage management
- Statistical analysis of different precipitation scenarios with the Copula-method.

This project between Germany and Austria is still ongoing.

Progress:

The investigation area comprises the river Inn starting at Kufstein/ Oberaudorf up to the confluence of the river Inn and the Danube in Passau including the river Salzach. In general, conditions are examined at both sides of the riverbank. Project partners are the Technical University Wien, the chair of hydrology and river basin management at the Technical University Munich, the University Kassel as well as the chair of hydraulic and water resources engineering at the Technical University Munich. The project is subdivided into six work packages:
The spatial-temporal behaviour of flood waves and their likelihood of occurrence is part of WP A and is simulated with a stochastic precipitation-runoff modelling approach. In WP B the range of flood events is generated using the Copula method to define inlet boundary conditions and constraints of the numerical model. The objective of WP C is to find out the retention potential of each weir plant based on its organisation of weir operation. In WP D potential retention sites with the best cost-value-ratio should be identified for polders controlled or uncontrolled as well as for relocation of dikes. The potential retention sites are chosen with regard to their impact on flow balancing and their temporal influence on flood waves of different probabilities of occurrence. The effect analyses are conducted with in total twelve flood events. In addition, the sites are evaluated based on their impact with regard to the structural engineering, residential areas – infrastructure – human beings, agriculture – forestry and ecology. The characteristics of each site are summarised in a site portrait. WP E is dealing with sediment transport processes regarding agricultural aspects, operation of hydroelectric power stations and flood hazards due to reduced discharge capacities. In WP F the alteration of the riverbed due to flood and its hazard potential should be analysed using a physical model combined with numerical calculations of the hydro-morphological processes.

The work packages A and B are completed, WP C is nearly completed. The other work packages are still ongoing.

7.14 ProDaM – Protect Danube and Morava

The project objective is to optimize the joint flood management in the border area of the Danube and Morava between Austria and the Slovak Republic. The specific objectives include the following:

- Analysis of the residual risk at the river Morava
- Common understanding about residual risk and residual risk management
- Planning of the improvement of the common flood protection dam Wolfsthal-Petržalka

The overall objective and/or benefit of the project is to protect the border regions by means of coordinated flood measures.
The ProDaM project is ongoing. The data acquisition by means of laser scan flights is of priority.

7.15 DAMWARM project (Drava And Mura WAter and Risk Management)

Project focuses on better and more efficient Drava and Mura river basin and flood (and other) risk management. The Drava River is the fourth largest tributrary of the Danube and it's main course is full of hydropower plants and other large water management infrastructure. Floods, drought and other risk management without the full, swift and online cooperation and communication of water management authorities and hydropower plants' operators is nearly impossible. Large floods, droughts and different environmental issues in the past few years (especially the floods in year 2012) have shown that a better communication between water management and hydropower plant operators is needed.
Main activities of the project are:

- analysis and review of all the existing flow models & forecasting systems in both transboundary river basins;
- development of flow forecasting models for parts of both Drava and Mura river basins where they don't exist;
- thorough review and analysis of all the existing rules of operations for all existing hydropower plants and other water management infrastructure in both transboundary river basins;
- development of new set of hydropower plant and other water management infrastructure's operational rules incorporating newest flow and meteorological forecasting knowledge and models, environmental objectives and other sustainability principles;
- operational set-up of the common flood forecasting system and platform for both transboundary rivers basins covering four countries;

The main results of the project include:

- development of the flow forecasting models for the Drava and Mura river basins where they don't exist;
- development of the ecologically sound, sustainable and effective (from the public interest point of view at the times of floods and droughts) rules of operation for the hydropower and other water management infrastructure in both river basins;
- development of joint flow forecasting platform integrating all the existing national and newly developed forecasting models and its operational set up.

Partners in the project include responsible water management authorities from Austria, Slovenia, Croatia and Hungary and all hydropower plant operation public companies.
Project was submitted to different funding calls, but was not successful. Project is therefore put on hold, while additional funding possibilities are being explored.

7.16 FRISCO 1

The FRISCO1 project (Cross - Border Harmonised Slovenian - Croatian Flood Risk Reduction 1 - Non Structural Measures, https://frisco-project.eu/hr/) is a strategic project aimed at reducing flood risk in the river basins of the Dragonja, Kupa / Kolpa, Sutla / Sotla, Bregana and parts of the Drava and Mura river basins and is implemented in the framework of the Cooperation Programme INTERREG V-A Slovenia - Croatia.

The main purpose of the measures envisaged in FRISCO1 is to protect lives and property and reduce damage by flooding. In addition to improving flood safety in these cross - border river basins, the conditions for developing sustainable tourism and preserving the rich biological diversity of the border area will be improved; moreover, the project also contributes to the objectives of the EU Danube Region.

Results of the project are:

- Improved databases for flood risk management,
- Cross-border studies of comprehensive flood risk management,
- Improved hydrological hydraulic models,
- Improved flood prediction model,
- Improved and cross - border harmonised flood risk maps,
- Common projects (preparing project and other documentation),
- Early warning system (upgrading predictive and warning alarm system),
- Raising awareness of the public on flood risks and institutional strengthening of the flood risk management system.

FRISCO1 is the first approved strategic project in the framework of the cross-border Cooperation Programme Slovenia - Croatia for the programming period 2014 - 2020 (INTERREG V-A Slovenia - Croatia). For the project, valued at EUR 4,070,950 million, 85 % is contributed by the European Regional Development Fund and 15 % by all project partners combined. Project FRISCO1 has successfully finished in summer 2019 and all the results are available at its website.

Based on the results of FRISCO1 Project, three additional projects aiming at structural flood risk mitigation measures were launched:

- FRISCO 2.1 (Cross-Border Harmonized Flood Risk Reduction 2.1 - Structural Measure Vonarje dam, https://frisco21-project.eu/en/),
- FRISCO 2.2 (Cross-Border Harmonized Flood Risk Reduction 2.2 - Construction measures in the Mura River Basin, http://frisco22-project.eu/home-en/) and
- FRISCO 2.3 (Cross-Border Harmonized Flod Risk Reduction 2.3 - Structural Measures in the Drava and Kolpa / Kupa river basins).

7.17 DAREnet

DAREnet is a network of practitioners dealing with flood resilience in the Danube River Region, supported by a continuously evolving multi-disciplinary community of stakeholders consisting of policy makers, academics, industry and many more. ICPDR is an active project partner.
Further information is presented in the DFRMP chapter 5.5.3.3.

7.18 Danube H2020 Insurance Project

Probabilistic modelling increases confidence of risk assessments of low-probability, high-impact flood events and represents the standard approach in, for example, the insurance industry. Combining the approaches from climate impact research and the insurance industry, a probabilistic, high-resolution flood model for the entire Danube River basin (the Future Danube Model) was constructed as part of the EU-funded H2020_Insurance project (2017–2020) and in cooperation with insurance partners.
Further information is presented in the DFRMP chapter 5.5.6.7.

7.19 MUNICIP-AID

Multi-national Initiative for Civil Protection Actions in Danube Region.
The project identifies interlinkages of policies, gaps and examples of implementation, and deploy pilot activities to build the recommendations into practice. Comprehensive approach for knowledge-sharing on flood rescue activities, as well as for volunteer management during flood response will be introduced. A common training framework and a coordination tool is to be developed and piloted.
Project proposal was submitted to DTP 3rd call by a consortium of 15 partners and 5 ASPs from 7 countries and it was rejected by DTP.

7.20 InterFloodCourse project

A curriculum and teaching material for an international postgraduate course on flood risk management to harmonize methodologies and foster academic mobility of engineers in training within the Danube region operative flood management bodies was prepared with the involvement of experts from 6 DRB countries. Additional information is provided in the DFRMP chapter 5.5.6.5
More information: https://vtk.uni-nke.hu/oktatas/interfloodcourse
More information: https://www.danubeenvironmentalrisks.eu/interfloodcourse
The project has been finished.

7.21 SHELTER

Sustainable Historic Environments hoListic reconstruction through Technological Enhancement and community based Resilience - SHELTER project (https://shelter-project.com/), approved by EU Horizon 2020 Programme aims at developing a data driven and community-based knowledge and operational framework that will bring together the scientific community and heritage managers with the objective of increasing resilience, reducing vulnerability and promoting better and safer reconstruction in Historic Areas to cope with climate change and natural hazards.
The Shelter project team coordinated by the Fundacion Tecnalia Research & Innovation is formed by a multidisciplinary and complementary consortium of 23 partners.
All the developments of the project will be validated in 5 open labs (case studies), representative of main climatic and environmental challenges in Europe and different heritage's typologies.
The Sava River basin is one of Shelter's open labs jointly coordinated by the International Sava River Basin Commission and UNESCO Regional Bureau for Science and Culture in

Europe. A need for the spatial layer on cultural-historical heritage, in the format of Sava GIS, was recognized within the development of Sava FRMP and therefore the project will aim to collect input data on the cultural-historical heritage from the relevant national institutions. The collected data will be consolidated in a properly structured way for storing in Sava GIS for the purpose of processing and managing by the Sava Geoportal to be able to create and support services-based data exchange. Using collected data, the flood impact analysis is going to be performed on one or a few the most vulnerable CH sites within the areas of mutual interest for flood protection in the Sava River basin (AMIs).
Also networking between different sectors (water/floods, cultural-historical heritage and emergency management) and the continuous exchange of knowledge, best practices and facilitate peer-learning processes to raise awareness will be performed.
The project, with duration of 48 months, was officially launched on June 01, 2019.

7.22 WACOM

The main objective of the Water Contingency Management in the Sava River Basin - WACOM project (http://www.interreg-danube.eu/approved-projects/wacom) is the reduction of environmental risks related to accidental pollution and floods, especially with potential transboundary impact by improved cooperation of key actors and jointly developed common operational system for activating the accident management protocols within the Sava River Basin. It will focus on the implementation of three multilateral protocols regarding the flood protection, entered into force in 2015, on prevention of water pollution caused by navigation, entered into force in 2017 and on emergency situation where the final harmonization took place in 2020.
The specific objectives of the WACOM project are

- Improved preparedness and management of the response (coping capacity) of all involved stakeholder during the pollution and flood incidents with improved definition of roles, and response assignments.
- Capacity building and transnational stakeholder dialogue defining common operational environment of all stakeholders.
- Development of integrative tools enabling more efficient and therefore more effective transnational preparedness and response in the case of water disasters, especially by common situational awareness.
- Filling the identified gap between the two pillars of floods/accidental pollution response institutions – to the complexity of the transnational response on the same river basin an additional complexity – cooperation between water management institutions and disaster management institutions (e.g. civil protection) is imposing another challenge, which will be addressed by the project.

The Lead partners is the University of Ljubljana, while the project partners are institutions responsible for water management, civil protection, and navigation from the Parties to the Framework Agreement on the Sava River Basin (SI, HR, BA and RS) and the International Sava River Basin Commission (ISRBC).
The project started in July 2020 and ends in December 2022.

Competent authorities

ICPDR IKSD

International Commission for the Protection of the Danube River

Internationale Kommission zum Schutz der Donau

Annex 3 of the DFRM Plan

Austria
Federal Ministry of Agriculture, Regions and Tourism
Stubenring 1
A-1012 Wien
Web link: www.bmlrt.gv.at

Bosnia and Herzegovina
Ministry of Foreign Trade and Economic Relations
Musala 9
BiH-71000 Sarajevo
Web link: www.mvteo.gov.ba

Federal Ministry of Agriculture, Water Management and Forestry
Hamdije Čemerlića 2
BiH-71000 Sarajevo
Web link: https://fmpvs.gov.ba

Ministry of Agriculture, Forestry and Water Management of Republika Srpska
Trg Republike Srpske 1
BiH-78000 Banja Luka
Web link: www.vladars.net

Government of Brcko District of BiH
Department for Agriculture, Forestry and Water Management
Bulevar Mira 1
BiH-76100 Brčko distrikt BiH
Web link: www.vlada.bdcentral.net

Bulgaria
Ministry of Environment and Water
22 Maria-Luisa Blvd.
BG-1000 Sofia
Web link: www.moew.government.bg

Danube River Basin Directorate
60, Chataldzha str.
BG -5800 Pleven
Web link: http://www.bd-dunav.org/

Croatia
Ministry of Economy and Sustainable Development
Radnička cesta 80,
ZagrebHR-10000 Zagreb
Web link: https://mzoe.gov.hr/default.aspx

Hrvatske vode
Ulica grada Vukovara 220
HR-10000 Zagreb
Web link: https://www.voda.hr/

Czech Republic
Ministry of Environment
Vrsovická 65
CZ-10010 Praha 10
Web link: www.mzp.cz

Ministry of Agriculture
Tesnov 17
CZ-117 05 Praha 1
Web link: www.mze.cz

Germany
Bavarian State Ministry
for Environment and Consumer Protection
Rosenkavalierplatz 2
D-81925 München
Web link: www.stmuv.bayern.de/

Ministry of the Environment, Climate Protection and the Energy Sector Baden-Württemberg
Kernerplatz 10
D-70182 Stuttgart
Web link: www.um.baden-wuerttemberg.de/

Hungary
Ministry of Interior
József Attila utca 2-4.
H-1051 Budapest
P.O.box: 1903 Budapest, Pf.: 314.
Web link: www.kormany.hu

General Directorate of Water Management
Márvány utca 1/D.
H-1012 Budapest
P.O.box: 1253 Budapest, Pf. 56.
Web link: www.ovf.hu

Moldova
Ministry of Agriculture, Regional Development and Environment
9 Constantin Tanase St.
MD-2005 Chisinau

Web link: www.madrm.gov.md

Agency Apele Moldovei under the Ministry of Agriculture, Regional Development and Environment
5 Gheorghe Tudor St.
MD-2028 Chisinau
Web link www.apelemoldovei.gov.md

State Hydro-meteorological Service under the Ministry of Agriculture, Regional Development and Environment
134 Grenoble St.
MD-2072, Chisinau
Web link: www.meteo.md

General Inspectorate for Emergency Situations under the Ministry of Internal Affairs
69 Gh. Asachi St.
Web link: www.dse.md

Montenegro
Ministry of Agriculture, Forestry and Water Management
Rimski Trg 46
ME – 81000 Podgorica
Web link: www.minpolj.gov.me

Romania
Ministry of Environment, Waters and Forests
12 Libertatii Blvd., 5th District
RO-04129 Bucharest
Web link: www.mmediu.ro

National Administration "Romanian Waters"
6 Edgar Quinet St., 1st District
RO-010018 Bucharest
Web link: www.rowater.ro

National Institute of Hydrology and Water Management
97 Bucuresti-Ploiesti Blvd, 1st District
RO-013686, Bucharest
Weblink: www.hidro.ro

Serbia
Ministry of Agriculture, Forestry and Water Management
(MAFW)–Republic Directorate for Water
Bulevar umetnosti 2a
RS-11070 New Belgrade
Web link: www.rdvode.gov.rs

Public water management company ``Vode Vojvodine``
21000 Novi Sad
Bulevar Mihaila Pupina 25
Web link: www. vodevojvodine.com

Public water management company ``Srbijavode``
11070 New Belgrade
Bulevar umetnosti 2a
Web. Link: www.srbijavode.rs

Slovak Republic
Ministry of the Environment of the Slovak Republic
Námestie L'. Štúra 1
SK-81235 Bratislava
Web link: www.enviro.gov.sk

Slovenia
Ministry of the Environment and Spatial Planning
Dunajska 48
SI-1000 Ljubljana
Web link: https://www.gov.si/drzavni-organi/ministrstva/ministrstvo-za-okolje-in-prostor/

Ukraine
The State Emergency Service of Ukraine
55-a, O.Gonchara str.
UA-01601, Kyiv
Web link: www.dsns.gov.ua

Ministry of Environmental Protection and Natural Resources of Ukraine
35, Vasilya Lipkivs'kogo str.
UA-03035 Kyiv
Web link: www.mepr.gov.ua

State Agency on Water Resources of Ukraine
8, Velyka Vasylkivska Str.
UA-01601 Kyiv
Web link: www.davr.gov.ua

Bilateral agreements on flood risk management in the DRBD

ICPDR IKSD

International Commission for the Protection of the Danube River

Internationale Kommission zum Schutz der Donau

Annex 4 of the DFRM Plan

Austria

With Germany

Interstate treaty between the Republic of Austria on the one hand and the Federal Republic of Germany and the European Economic Community on the other hand on the cooperation regarding water management in the Danube River catchment (BGBl Nr. 17/1991).
The instrument of ratification signed by the Austrian Federal President and countersigned by the Austrian Federal Chancellor was exchanged on 14th December 1990 and referring to Art. 12 (2) came into effect on 1st March 1991.

Vertrag zwischen der Republik Österreich einerseits und der Bundesrepublik Deutschland und der Europäischen Wirtschaftsgemeinschaft andererseits über die wasserwirtschaftliche Zusammenarbeit im Einzugsgebiet der Donau (BGBl Nr. 17/1991)
Die vom Bundespräsidenten unterzeichneten und vom Bundeskanzler gegengezeichneten Ratifikationsurkunden wurden am 14. Dezember 1990 ausgetauscht; der Vertrag tritt gemäß seinem Art. 12 Abs. 2 mit 1. März 1991 in Kraft

With Republic of Slovakia

Agreement between the Republic of Austria and Czechoslovakian Socialist Republic regarding water management of transboundary rivers. (BGBl. Nr. 106/1970, idF. BGBl. Nr. 1046/1994 – Further application with Slovak Republic)
The instruments of ratification had been exchanged on 16th February 1970. The agreement came into effect by 18th March 1970 referring to Art. 22 (2).

Vertrag zwischen der Republik Österreich und der Tschechoslowakischen Sozialistischen Republik über die Regelung von wasserwirtschaftlichen Fragen an den Grenzgewässern
(BGBl. Nr. 106/1970, idF. BGBl. Nr. 1046/1994 - Weiteranwendung des Vertrages im Hinblick auf die Slowakische Repulik)
Die Ratifikationsurkunden zum vorliegenden Vertrag sind am 16. Feber 1970 ausgetauscht worden; der Vertrag ist somit gemäß seinem Artikel 22 Absatz 2 am 18. März 1970 in Kraft getreten.

With Czech Republic

Agreement between the Republic of Austria and Czechoslovakian Socialist Republic regarding water management of transboundary rivers. (BGBl. Nr. 106/1970, idF. BGBl. Nr. 1046/1994 – Further application with Czech Republic)
The instruments of ratification had been exchanged on 16th February 1970. The agreement came into effect by 18th March 1970 referring to Art. 22 (2).

Vertrag zwischen der Republik Österreich und der Tschechoslowakischen Sozialistischen Republik über die Regelung von wasserwirtschaftlichen Fragen an den Grenzgewässern
(BGBl. Nr. 106/1970, idF. BGBl. Nr. 1046/1994 - Weiteranwendung des Vertrages im Hinblick auf die Tschechische Repulik)
Die Ratifikationsurkunden zum vorliegenden Vertrag sind am 16. Feber 1970 ausgetauscht worden; der Vertrag ist somit gemäß seinem Artikel 22 Absatz 2 am 18. März 1970 in Kraft getreten.

With Republic of Slovenia / Mura River

Agreement between the Repbulic of Austria and the Federal People's Republic of Yugoslavia regarding the water management of the Mura River (BGBl. Nr. 119/1956, Republic of Slvenia Slowenien – further application, BGBl. Nr. 714/1993, Republic of Croatia – no further application, BGBl. Nr. 474/1996)
The instruments of ratification had been exchanged and came into force on/by 9th February 1956.

Abkommen zwischen der Republik Österreich und der Föderativen Volksrepublik Jugoslawien über wasserwirtschaftliche Fragen der Mur-Grenzstrecke und der Mur-Grenzgewässer (Mur-Abkommen)
Da der Austausch der Ratifikationsurkunden am 9. Feber 1956 vorgenommen wurde, ist das Abkommen gemäß seinem Artikel 11 am 9. Feber 1956 in Kraft getreten.

With Republic of Slovenia / Drava River

Governmental agreement between the Republic of Austrian and the Federal People's Republic of Yugoslavia regarding the water management of the Drava River. After approval of the governments the agreement came into effect by 15th January 1955.

„Regierungsübereinkommen vom 25. Mai 1954 zwischen Österreich und Jugoslawien über Wasserwirtschaftliche Fragen an der Drau" [HARTIG 1955]. „Nach Vorliegen der Genehmigung der Regierungen ist durch Notenwechsel festgelegt worden, dass als erster Tag der Wirksamkeit der 15. Jänner 1955 angesehen wird" [HARTIG 1955].

Hungary

Agreement between the Autrian Repbulic and the People's Repbulic of Hungary regarding the water management in the border region. (BGBl. Nr. 225/1959) The agreement came into effect by 31st July 1959.

Vertrag zwischen der Republik Österreich und der Ungarischen Volksrepublik über die Regelung der wasserwirtschaftlichen Fragen im Grenzgebiet (BGBl. Nr. 225/1959) Dieser Vertrag ist gemäß seinem Artikel 22 am 31. Juli 1959 in Kraft getreten.

Switzerland

Interstate treaty of between the Repbulic of Austria and the Swiss Confederation on the regulation of the Rhine from the Ill mouth to the Lake Constance. (StF: BGBl. Nr. 178/1955) The instruments of ratification had been exchanged and came into effect on/by 22nd July 1955.

Staatsvertrag der Republik Österreich mit der Schweizerischen Eidgenossenschaft über die Regulierung des Rheines von der Illmündung bis zum Bodensee
Da der Austausch der Ratifikationsurkunden am 22. Juli 1955 stattgefunden hat, ist der Vertrag gemäß seinem Art. 35 an diesem Tag in Kraft getreten.

Liechtenstein

Agreement between the Republic of Austria and the Princedom of Liechtenstein on the definition of common principles of the regulation of the Rhine from the Swiss-Liechtenstein boarder to the Ill mouth, as well as the regulation of the discharge of inland waters. (StF: BGBl. Nr. 333/1931) The instruments of ratification had been exchanged by 20th of October 1931. Referring to Art. 14 the agreement came into effect on 17th November 1931.

Vertrag zwischen der Republik Österreich und dem Fürstentume Liechtenstein über die Festlegung gemeinsamer Grundlagen für die Regulierung des Rheins von der schweizerisch-liechtensteinischen Staatsgrenze bis zur Mündung des Illflusses, sowie über die Regelung der Ableitung liechtensteinischer Binnengewässer auf liechtensteinischem und österreichischem Gebiete und über die damit zusammenhängende Regulierung des Spirsgrabens, des Frickgrabens und der Esche.
Der Austausch der Ratifikationsurkunden hat am 20. Oktober 1931 stattgefunden. Der Vertrag tritt daher gemäß seinem Artikel 14 am 17. November 1931 in Kraft.

Bosnia and Herzegovina

Type of document	Counterpart Country	Title	Issued (year)	Subject
Agreement	Republic of Serbia	Agreement between Council of Ministers of Bosnia and Herzegovina and the Republic of Serbia on cooperation in protection against natural and other disasters (ratified in 2011)	Official Gazette of BH no 8/11.	Transboundary Early warning system cooperation
Agreement	Montenegro	Agreement on Cooperation in protection from natural and other disasters, between Council of Ministers of B&H and Montenegro Government (signed in 2007 and ratified in 2008)	Official Gazette of BH no 2/08.	Transboundary Early warning system cooperation
Agreement	Republic of Croatia	Agreement between the Croatian Government and the Government of Bosnia and Herzegovina on the regulation of water management relations (signed 11 July 1996 in Dubrovnik)	Official Gazette of BiH no 6/96.	Transboundary water management
Agreement	Republic of Croatia	Agreement between the Council of Ministers of Bosnia and Herzegovina and the Croatian Government on cooperation in the protection of natural and manmade disasters	Official Gazette of BiH no 7/01.	Transboundary Early warning system cooperation
Agreement	Republic of Slovenia	Agreement between the Council of Ministers and the Government of the Republic of Slovenia on cooperation in the protection of natural and manmade disasters	Official Gazette of BiH no 3/12.	Transboundary Early warning system cooperation

Bulgaria

With Romania
Agreement between the Ministry of Environment and Water of the Republic of Bulgaria and the Ministry of Environment and Water Management of Romania on Cooperation in the Field of Water Management, signed on 12 November 2004 in Bucharest, entry into force on 15 March 2005.

With Serbia
A draft bilateral agreement with Serbia is at the final stage of preparation by Bulgarian competent authorities, to be proposed officially to the Serbian authorities via diplomatic channels. The proposed draft is entitled "Agreement between the Ministry of Environment and Water of the Republic of Bulgaria and the Ministry of Agriculture and Environmental Protection of the Republic of Serbia on Cooperation in the Field of Water Management".

Croatia

With Slovenia:
Treaty between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on regulation of water management relations.

With Hungary:
Agreement between the Government of the Republic of Hungary and the Government of the Republic of Croatia about the issues in cooperation in water management.

With Bosnia and Herzegovina:
Agreement between the Croatian Government and the Government of Bosnia and Herzegovina on the regulation of water management relations.
Agreement between the Council of Ministers of Bosnia and Herzegovina and the Croatian Government on cooperation in the protection of natural and manmade disasters.

Montenegro
Agreement between the Government of the Republic of Croatia and the Government of Montenegro in the field of Water Management

With Serbia:
No bilateral agreements with the Republic of Serbia. The responsible Ministry is involved in the formulation of agreements and the commencement of a negotiation process with neighbouring countries.

Multilateral:
Framework Agreement on the Sava River Basin among: Bosnia and Herzegovina, Republic of Croatia, Republic of Slovenia and Republic of Serbia.

Czech Republic

With Slovakia:
Dohoda mezi vládou České republiky a vládou Slovenské republiky o spolupráci na hraničních vodách - podepsána dne 16. prosince 1999 a ve stejný den vstoupila v platnost
The Agreement between the Governments of the Czech Republic and the Slovak Republic on cooperation on transboundary waters

Směrnice pro předpovědní, hlásnou a varovnou službu na česko-slovenských hraničních vodních tocích
Implemantation for forecasting, reporting and warning service on the Czech-Slovak transboundary waters

With Austria:
Smlouva mezi Československou socialistickou republikou a Rakouskou republikou o úpravě vodohospodářských otázek na hraničních vodách ze dne 7. prosince 1967, platnou od 18. března 1970
Convention between the Czechoslovak Socialist Republic and the Republic of Austria on the settlement of water management issuies concerning transboundary waters signed on December 7, 1967 and came into force on March 18, 1970.

Směrnice pro varovnou službu na česko-rakouských hraničních vodách
Directive for warning service on Czech- Austrian transboundary waters.

Germany
With Austria

Interstate contract between the Republic of Austria on the one hand and the Federal Republic of Germany and the European Economic Community on the other hand on the cooperation regarding water management in the Danube River catchment.

The instrument of ratification signed by the Austrian Federal President and countersigned by the Austrian Federal Chancellor was exchanged on 14th December 1990 and referring to Art. 12 (2) came into effect on 1st March 1991.

Hungary

Name of the agreement			**Date and place of the signature** **Date of coming to effect**
AT	A Magyar Népköztársaság és az Osztrák Köztársaság között a határvidék vízgazdálkodási kérdéseinek szabályozási tárgyában	Agreement between the People's Republic of Hungary and the Republic of Austria about regulation of the water management issues in the border region	Vienna, 09/04/1956 31/07/1959
SK	A Magyar Népköztársaság Kormánya és a Csehszlovák Szocialista Köztársaság Kormánya között a vízgazdálkodás kérdéseinek szabályozásáról (magyar-szlovák viszonylatban)	Agreement between the Government of the People's Republic of Hungary and the Government of the Czechoslovak Socialist Republic about regulation of the water management issues	Budapest, 31/05/1976 28/07/1978 (new agreement accepted in Nov 2014, being published)
UA	A Magyar Köztársaság Kormánya és Ukrajna Kormánya között a határvizek védelme és fenntartható hasznosítása céljából folytatandó együttműködésről	Agreement between the Government of the Republic of Hungary and the Government of Ukraine about the cooperation purposing the protection and sustainable use of the rivers in the border region	Budapest, 11/11/1997 06/08/1999
RO	A Magyar Köztársaság Kormánya és Románia Kormánya között a határvizek védelme és fenntartható hasznosítása céljából folytatandó együttműködésről	Agreement between the Government of the Republic of Hungary and the Government of Romania about the cooperation purposing the protection and sustainable use of the rivers in the border region	Budapest, 25/09/2003 17/05/2004
RS	A Magyar Népköztársaság és a Jugoszláv Szövetségi Népköztársaság Kormánya között a vízgazdálkodási kérdések tárgyában (magyar- szerb viszonylatban)	Agreement between the Government of the People's Republic of Hungary and the Government of the Yugoslavian Federal People's Republic about the water management issues	Belgrade, 08/08/1955 19/05/1956 (new agreement is under discussion)
HR	A Magyar Köztársaság Kormánya és a Horvát Köztársaság Kormánya között a vízgazdálkodási együttműködés kérdéseiben	Agreement between the Government of the Republic of Hungary and the Government of the Republic of Croatia about the issues in cooperation in water management	Pécs, 10/06/1994 03/03/1995
SI	A Magyar Népköztársaság és a Szlovén Köztársaság Kormánya között a vízgazdálkodási kérdések tárgyában	Agreement between the Government of the Republic of Hungary and the Government of the Republic of Slovenia about the water management issues	Ljubljana, 21/10/1994 27/05/1995

Moldova

Coordination of the flood risk management between Moldova and Romania, and Moldova and Ukraine takes place through several agreements and regulation such as:

- Agreement between the Government of the Republic of Moldova and the Government of Romania on cooperation and mutual assistance in case of disasters (signed in Iasi on March 3, 2012), ratified in the Republic of Moldova by Law no. 196/2012, in RO - by Law no. 65/2013;

- Government Decision no. 853/1999 regarding the Opening of the international road traffic on the dam of the Costeşti - Stînca Hydro-technical Node on the Prut River;
- Agreement between the Government of the Republic of Moldova and the Cabinet of Ministers of Ukraine on cooperation in the field of prevention of industrial damage, catastrophes, natural disasters and liquidation of their consequences (signed in Kiev on August 4, 1998), approved by Government Decision no. 975/1998;
- Regulation on the classification of emergency situations and on the manner of accumulation and presentation of information about protection of population and territory in the case of emergency situations, approved by Government Decision no. 1076/2010;
- Agreement between the Government of the Republic of Moldova and the Government of Romania on cooperation for the protection and sustainable use of water resources of the Danube and Prut, signed in Chisinau on June 28, 2010, ratified by Government Decision no. 1071/2010. Agreement is implemented by inter-governmental Hydro-technical Commission established in 2010, which composed of 4 sub-committees: i) for the operation and maintenance of the Costeşti-Stânca Hydro-technical Node, ii) for protection against floods and frosts, iii) for quantitative water management and hydrometeorology, and iv) for the protection of water quality and biodiversity of water bodies. The Commission represents the focal point of cooperation and coordination in the field of floods between the two parties, Romania and the Republic of Moldova. The Commission coordinates the work on the implementation of the European Floods Directive, as well as the harmonization of flood risk management plans. Usually, the coordination of activities is carried out through written communications, but in case of emergency situations the co-chairs of the commission get in touch by phone, and the established ones will be transmitted by written communications.

Moldovan institutions responsible for intervention in case of floods are: Commission for Emergency Situations; General Inspectorate for Emergency Situations; Ministry of Agriculture, Regional Development and Environment; Agency "Apele Moldovei"; State Hydro-meteorological Service; Ministry of Health, Labor and Social Protection; National Agency for Public Health; Environment Agency; Inspectorate for Environmental Protection.

Montenegro
No information provided

Romania

Bilateral cooperation Romania – Ukraine

Cooperation shall be conducted under the Agreement between the Government of Romania and the Government of Ukraine on cooperation in border water management (Galati, 30 September 1997), ratified by the Romanian Parliament by Law no. 16 of 11 January 1999.
Activities for implementing the Agreement shall take place within the next three working groups, one for each important river:
1. Working group to resolve issues of Tisza River and its tributaries in the border area.
2. Working group to resolve issues of Siret and Prut in the border area.
3. Working group to resolve issues of Danube on the common border area.

Bilateral cooperation Romania – Hungary

The first agreement in water field between Romania and Hungary was signed in Bucharest on 14 April 1924 and was in force until 1945. This was followed by 4 cycles of cooperation, 1945-1961, 1962-1965, 1965-1970, 1970 to 1986, the agreement was renewed every time. On 25 June 1986 was signed in Bucharest Convention between the Government of Romania and the Republic of Hungary on the regulation of issues related to hydraulic structures on water which form or cross the border. The Convention entered into force November 20, 1986.
Currently, cooperation is performed under the Agreement between Romania and the Republic of Hungary on cooperation for the protection and sustainable use of water in the border region (Budapest, September 15, 2003), ratified by Government Decision no. 577/15.04.2004.
The agreement applies to the following rivers: Tur, Somes, Crasna, Barcau, Ier, Crisul Repede, Crisul Negru, Crisul Alb and Mures by hydrotechnical Romanian-Hungarian Commission.
For carrying out the agreement, the Commission has established the following standing Subcommittees areas:
1. Coordination and development cooperation Subcommittee;
2. Subcommittee on Water Management and Hydrometeorology;
3. Subcommittee on water quality;
4. Subcommittee on flood defence.
Subcommittees carry out the decisions of the Commission, the tasks resulted from regulations act independently within the provisions of the Regulations for measures to be taken immediately and assures the continuity of technical activity based on the Agreement.

Bilateral cooperation Romania – Serbia

Cooperation is achieved until 2020 under the Agreement between the Romania and RPF Yugoslavia on hydraulic problems in hydraulic systems and watercourses that cross the border or are the border (Bucharest, April 7, 1955), ratified by Decree no. 242/17.06.1955 and entered into force in 30 June 1955.
In 5 June 2019, a new agreement between Romania and Serbia regarding cooperation on sustainable cross-border water management was signed and entered into force in 1 September 2020. It was approved by the Government Decision no. 725/27 August 2020.
The agreement applies to the following rivers: the Danube, Nera, Moravita, Aranca, Bega Veche, Bega Channel, Timis, Caras and Nera by hydrotechnical Romanian-Serbian Commission.
For carrying out the agreement, the Commission has established the following standing Subcommittees areas:
1. Subcommittee for water quality;
2. Subcommittee on hydrometeorology and quantitative water management;
3. Subcommittee on flood defence and ice.
The previous regulations and methodologies in accordance with the "Agreement between the Romanian People's Republic and the Federal People's Republic of Yugoslavia on Hydrotechnical Issues on hydrotechnical systems and watercourses on the border or intersected by the state border" (Bucharest, 1955) remains as follows:

1. Operation rules of the Romanian-Yugoslav Hydrotechnical Commission, 1956 (adopted at the first session of the Romanian-Yugoslav Joint Commission, 1956);
2. The common regulation of flood protection on watercourses and hydrotechnical systems which form or are crossed by the Romanian-Yugoslav state border (adopted at the XVIII-th Session of the Romanian-Yugoslav Joint Hydrotechnical Commission, 1971, as subsequently amended and supplemented);
3. Operation rules of the Tomasevat weir (adopted at the XXIII-th Session of the Joint Commission Romanian-Yugoslav on hydrotechnics, 1980);
4. Methodology of joint examination of water quality in the border watercourses profiles that form or are crossed by the Romanian-Yugoslav state border (adopted at the XXIX Session of the Joint Committee Romanian-Yugoslav on hydrotechnics, 1998)

A special agreement regarding Iron Gates I and II exists also, named "The Convention between the Government of Romania and the Federal Government of the Federal Republic of Yugoslavia on the operation and maintenance of hydropower and navigation systems of Iron Gates I and II" signed in Drobeta-Turnu Severin in 1998.

Bilateral cooperation Romania - Bulgaria

Cooperation is achieved under the Agreement between the Ministry of Environment and Water Management of Romania and the Ministry of Environment and Water of the Republic of Bulgaria on cooperation in the field of water management (Bucharest, November 12, 2004), ratified by Government Decision no. 2419/21.12.2004.
The agreement applies to the Romanian-Bulgarian Joint Commission through the following three working groups:
1. Working Group for river basin water management;
2. Working Group on Danube;
3. Working Group on the Black Sea.

Bilateral cooperation Romania – Moldova

Cooperation is achieved under the Agreement between Romania and the Republic of Moldova on cooperation for the protection and sustainable use of water - Prut and Danube (Chisinau, 28 June 2010) approved by Government Decision no. 1092/2.11.2010.
Application of the Agreement shall be made by the Intergovernmental Hydrotechnical Committee on subcommittees established for the following fields:
1. Subcommittee on operation and maintenance of hydraulic Stanca-Costesti reservoir;
2. Subcommittee on flood defence and ice;
3. Subcommittee on quantitative water management and hydrometeorology;
4. Subcommittee on water quality and biodiversity protection of water bodies.

Serbia

With HUNGARY:
Agreement between the Government of the Republic of Serbia and the Government of Hungary on cooperation in the field of sustainable management of transboundary waters and river basins of common interest, signed in Subotica on 15 April 2019. It was ratified by the National Assembly of the Republic of Serbia through the Law of Confirmation of the Agreement ("Official Gazette of the RS - International Agreement", No. 4/2020). It came into force on 24 April 2020.

With ROMANIA:

- The agreement between the governments of FPR of Yugoslavia and the PR of Romania concerning water engineering issues related to boundary and transboundary systems and watercourse, entered into force on 7 April 1955.
    - Agreement between the Government of the Republic of Serbia and the Government of Romania on cooperation in the field of sustainable transboundary water management signed on 5 of June 2019. The Law on Ratification of the

Agreement between the Government of the Republic of Serbia and the Government of Romania on Cooperation in the Sustainable Management of Transboundary Waters ("Official Gazette of the RS - International agreements", No. 4/2020) was ratified by the National Assembly of Republic of Serbia.

- Several agreements and conventions governing the construction, operation and maintenance of the Iron Gate Hydro Power and Navigation System Djerdap were entered into force by Yugoslavia and Romania in 1963, 1964, 1967, 1976, 1977, 1987, and 1998.

With BULGARIA:
The agreement between the governments of the FPR of Yugoslavia and the PR of Bulgaria concerning water management issues, entered into force on 4 April 1958. The agreement is formally in force, but cooperation was discontinued in 1982.

With other neighbouring countries:
No bilateral agreements with the Republic of Croatia, Bosnia & Herzegovina, Republic of North Macedonia and Montenegro. The responsible Ministry has initiated extensive preparations for the formulation of agreements and the commencement of a negotiation process with neighbouring countries. Draft agreements were submitted to Bosnia & Herzegovina and Croatia in 2018.

Slovak Republic

Bilateral cooperation of the Slovak Republic (SR) on the border sections of the rivers – valid intergovernmental treaties and agreements:

With AUSTRIA:

Treaty between Czechoslovak Socialist Republic and Republic of Austria on the regulation of water management issues at the border waters (signed 7.12.1967 in Vienna, valid since 18.3.1970, inherited with partners after the formation of the SR in 1993, Treaty between SR and Republic of Austria currently in the ratification process).

The confirmation of status of contractual base between Slovak republic and Austrian republic after succession of Slovak republic into contracts of former Czech and Slovak federative republic published as Notice of Foreign Ministry of SR No. 369/2000 Collection of Laws.

With CZECH REPUBLIC:

Intergovernmental agreement between SR and Czech Republic on the cooperation at the border waters (signed 16.12.1999 in Zidlochovice, valid since 16.12.1999.

With HUNGARY:

Intergovernmental agreement between Czechoslovak Socialist Republic and People´s Republic of Hungary on the regulation of water management issues at the border waters (signed 31.5.1976 in Budapest, valid since 31.7.1978, inherited with partners after the formation of the SR in 1993, Treaty between SR and Republic of Hungary is ratified.

Contracts between Slovak republic and Hungarian republic on regime and cooperation in common state border published as Notice of Foreign Ministry of SR 269/1996 Collection of laws.

With POLAND:

Intergovernmental agreement between SR and Republic of Poland on the water management at the border waters (signed 14.5.1997 in Warsaw, valid since 6.12.1999.

With UKRAINE:

Intergovernmental agreement between SR and Ukraine on the water management issues at the border waters (signed 14.6.1994 in Bratislava, valid since 15.12.1995). It was published as Notice of Foreign Ministry No. 38/1996 Collection of laws.

Slovenia

With AUSTRIA:
Agreement between the Government of the Federal People's Republic of Yugoslavia and Federal Government of Austria on water management issues of the Drava river (Official Gazette of Federal People's Republic of Yugoslavia – MP 1-8/1955)
Agreement between the Federal People's Republic of Yugoslavia and the Republic of Austria on water management issues of the border section and the border waters of the Mura river (Official Gazette of Federal People's Republic of Yugoslavia – MP 10-49/1956).

With HUNGARY:
Agreement between the Government of the Republic of Slovenia and the Government of the Republic of Hungary on regulation of water management issues (Official Gazette of the Republic of Slovenia – MP 2/95).

With CROATIA:
Treaty between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on regulation of water management relations (Official Gazette of the Republic of Slovenia – MP 23/97)
Agreement on cooperation for the protection of the Adriatic Sea and the coastal area from pollution (Official Gazette of the Socialist Federal Republic of Yugoslavia – MP 2/1977).

With ITALY:
Agreement on the permanent Yugoslav-Italian commission on water management (Official Gazette of the Socialist Federal Republic of Yugoslavia – MP 9/80).
Agreement on cooperation for the protection of the Adriatic Sea and the coastal area from pollution (Official Gazette of the Socialist Federal Republic of Yugoslavia – MP 2/1977).

The minutes of all Slovenian bilateral commission meetings/sessions are available at:
http://www.evode.gov.si/index.php?id=92

Ukraine
The Tisza River Basin Water Resources Directorate (of the State Agency of Water Resources of Ukraine) is engaged in implementation of the Bilateral Intergovernmental Water Management Agreements in partnership with the Upper-Tisza Water Directorate (of the General Directorate of Water Management of Hungary), Kosice Water Management Directorate (of the Slovak Water Management Administration) and Somes-Tisa Water Directorate (of the National administration "Romanian Waters"), based on:

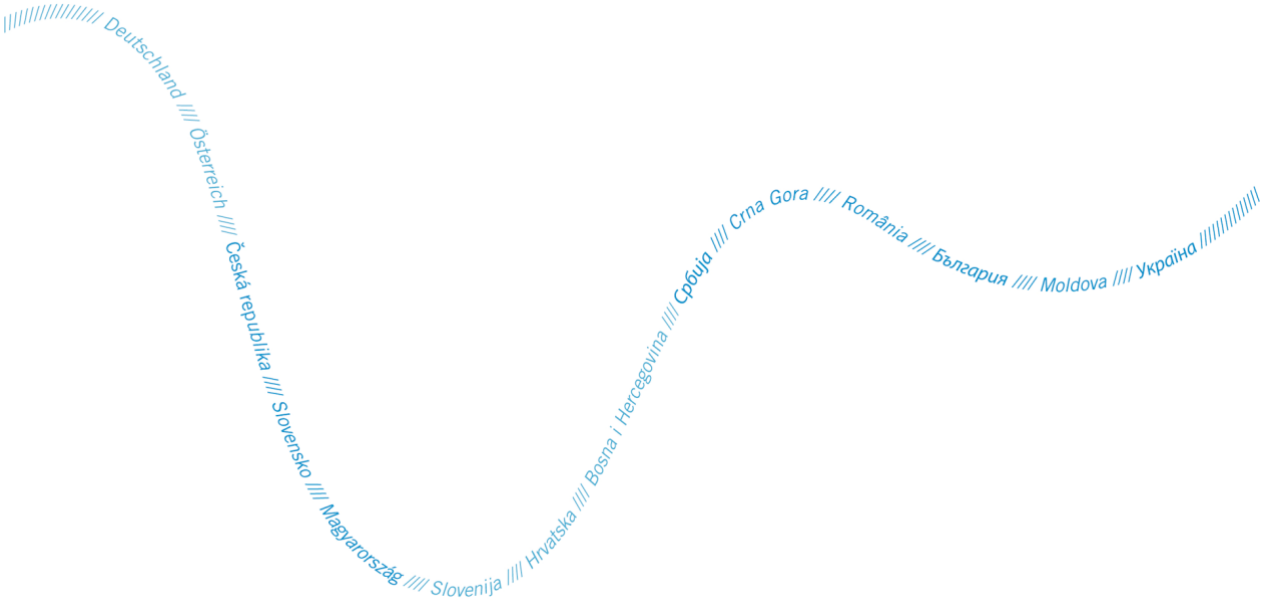
- the Agreement between the Government of Ukraine and the Government of Hungary on water management on boundary waters (Budapest, Hungary, 1997),
- the Agreement between the Government of Ukraine and the Government of Slovak Republic on water management on boundary waters (Bratislava, Slovak Republic, 1994),
- the Agreement between the Government of Ukraine and the Government of Romania on cooperation in the field of water management on boundary waters (Galati, Romania, 1997).

These bilateral agreements comprise the issues of flood protection, water resources management, water quality assessment and ecological monitoring, hydro-meteorological information exchange on boundary waters.

Danube Flood Risk Management Plan Update 2021: ANNEX 5 FY2020 Report

Living Danube Partnership

Version: final
Date: June 2020




WWF
WORKING TOGETHER FOR A LIVING DANUBE
THE Coca-Cola FOUNDATION
ICPDR IKSD
International Commission for the Protection of the Danube River
Internationale Kommission zum Schutz der Donau
Living Danube Partnership
FY2020 Report
June 2020

Summary

Expected results by 2021:

5,996

hectares of wetlands restored

17.52

million m^3 of water replenished.

As we head into the final year of the seven-year Living Danube Partnership (2014-2021), we are on track to achieve all of our targets for river and wetland restoration as well as communications and engagement. While the Covid-19 pandemic has caused delays and forced us to change plans particularly for awareness and engagement, we still expect to achieve all results by the end of June 2021 as planned.

River and wetland restoration is completed in 5 projects, with another 3 to be finished within the next year and one more by 2022. Despite delays, the current pipeline of projects across six countries of the Danube basin is on track to deliver 17.52 million m^3 of water replenished by 2021 (16.53 million m^3 directly financed by The Coca-Cola Foundation, versus 12 million m^3 target) and 5,996 hectares of wetlands restored (vs 5,327 ha target).

Outreach and awareness activities are on track or have exceeded targets. Through the Living Danube Tour travelling exhibit and other events, to date we have reached more than 86,094 of the 120,000 people we plan to reach directly. Indirectly, via traditional and social media, we have reached over 56 million people to date, well in excess of our 5 million target, with another 12 million projected by the end of next year. Outreach and sharing lessons with decision makers, experts and stakeholders will be a major focus for the last year of the partnership.

Thanks to its long-term commitment and flexible approach, the partnership has helped raise an additional €7.65 million for wetland conservation and restoration directly, by co-financing EU-funded projects; and over €11.33 million indirectly, by providing staff time and support for development of further initiatives. Beyond this, the Partnership has inspired stakeholders to undertake additional restoration projects, e.g. of further soda lakes at Neusiedler See or at Kalimok in Bulgaria.

At issue: Danube wetlands

80%

of Danube wetlands have been lost – and with them many fish populations

More than 80% of wetlands and floodplains of the Danube River and its main tributaries have been lost, and with them the ecosystem goods and services they provide, from fish and wildlife to flood and drought management. Fortunately, there is a growing appreciation of rivers and wetlands, and government commitments to not only conserve what remains, but also to restore what we have lost. However, actually restoring these areas involves a painstaking process of stakeholder engagement that can take years before actual measures like breaching dykes can be undertaken. As a result, most commitments to wetland restoration in the Danube basin remain on paper and not realised in practice.

The Living Danube Partnership addresses this challenge of implementation through implementation, advocacy and promotion.

Living Danube Partnership

The Living Danube Partnership brings together WWF-CEE, Coca-Cola with the support of The Coca-Cola Foundation and the International Commission for the Protection of the Danube River (ICPDR) to promote the conservation and restoration of wetlands in the Danube basin. Supported by a $4.4 million grant from The Coca-Cola Foundation, the seven-year (2014-21) partnership is working closely with local stakeholders and relevant authorities to connect river stretches or floodplains to the river system by opening dams, installing sluices for water retention or by restoring water supply channels. At the same time, a regional movement is being created for wetland conservation and restoration, as well as good water stewardship.

Our targets:

4,800

Olympic-sized swimming pools of water replenished

7,422

Football pitches of wetlands restored

A unique, cross-sectoral partnership

The Living Danube Partnership harnesses the mandate of the ICPDR, the capacity and resources of Coca-Cola and The Coca-Cola Foundation, and the facilitation and expertise of WWF-CEE to promote river and wetland restoration in the Danube basin, for people and nature.

Restoring rivers and wetlands

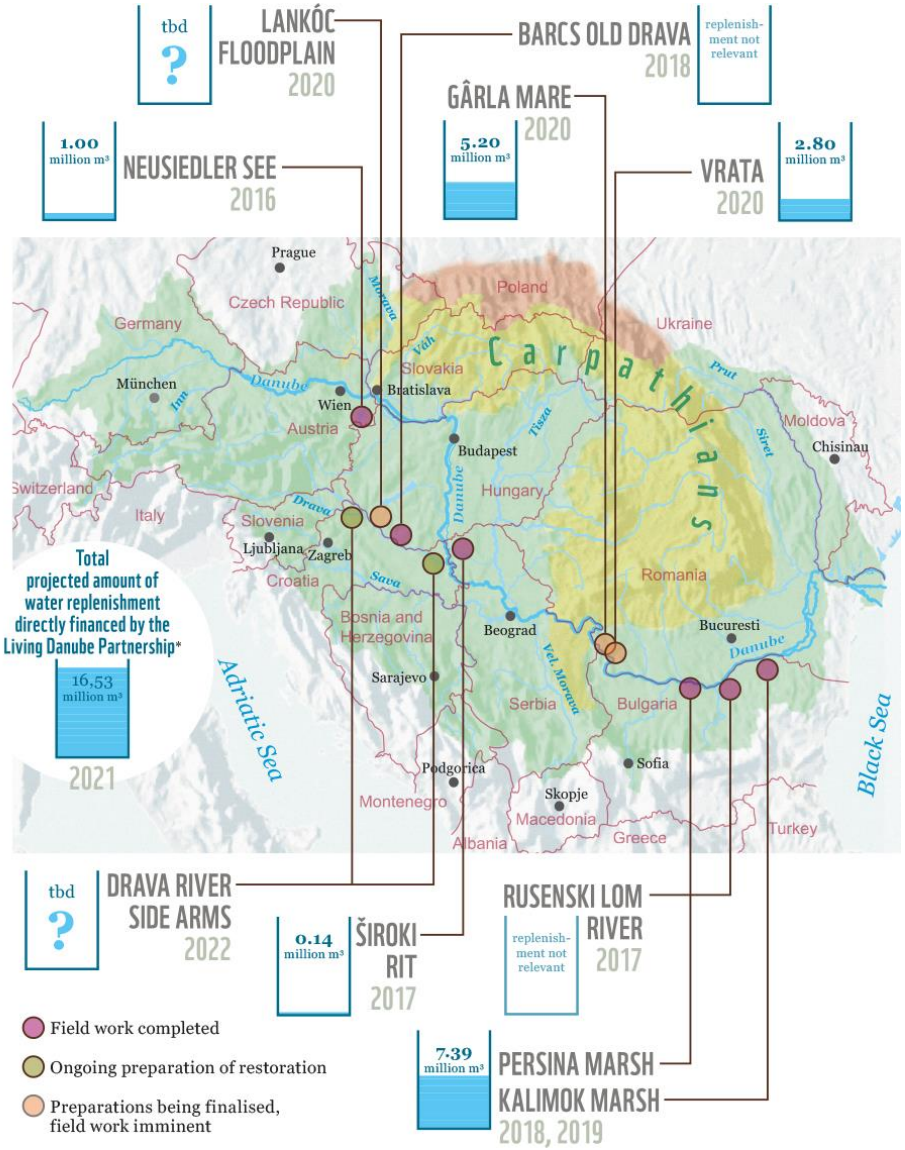
Drava River side arms

River and wetland restoration

Most of the restoration projects directly supported through the Living Danube Partnership have been completed. Three are expected to be completed in 2020 or in spring 2021: Garla Mare, Vrata and restoration of the Lankoc floodplain forest. A final project focused on restoring a number of side-arms of the Drava River in Croatia, where the Living Danube Partnership has leveraged significant EU support, will not be completed until 2022.

6,9

The Living Danube Partnership includes river and wetland restoration initiatives across 6 countries, 9 projects and over 20 individual sites.



Results: Restoration & replenishment

We expect to exceed our original targets for both wetland restoration and volume of water replenished. The greatest areas and volumes will be delivered by completed restoration projects at Persina and Kalimok marshes in Bulgaria and by restoration projects at Garla Mare and Vrata in Romania, which are expected to be completed in 2020. Other projects with limited area or volume are nevertheless important for biodiversity or as pilots – e.g. restoration of small but exceptional soda lakes at Neusiedler See, or the pioneering of fish passes on the Rusenski Lom river in Bulgaria.

5,996 hectares of wetlands are expected to be restored by 2021.

17.52 million cubic meters of water are expected to be replenished by 2021.

Table: Living Danube Partnership – River and wetland restoration achievements to date and planned

	2015	2016	2017	2018	2019	2020	2021	Forecast total	Original Target
Additional hectares of wetlands restored	0.00	400.00	53.00	0.00	3,700.00	1,330.00	513.00		
Total (cumulative) hectares wetlands restored	0.00	400.00	453.00	453.00	4,153.00	5,483.00	5,996.00	5,996.00	5,327.00

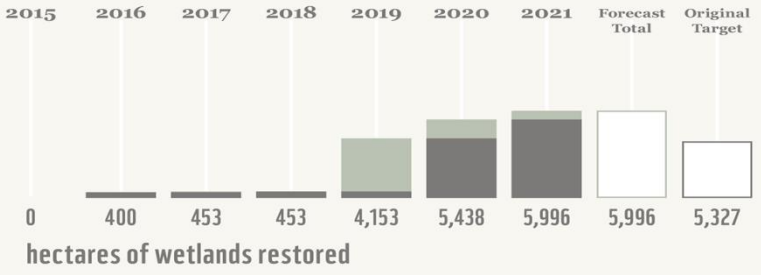
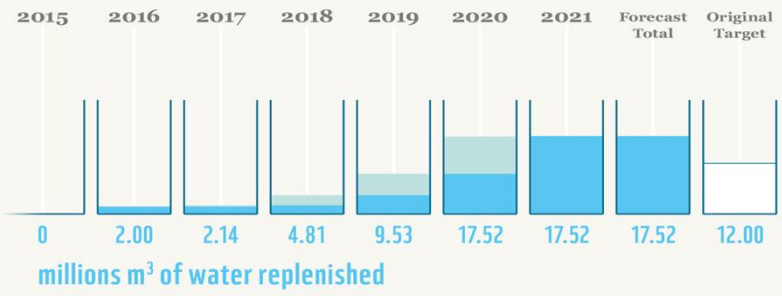


Table: Living Danube Partnership – River and wetland restoration achievements to date and planned (millions of m³)

	2015	2016	2017	2018	2019	2020	2021	Forecast total	Original Target
Additional water replenished	0.00	2.00	0.14	2.67	4.72	8.00	0.00		
Additional water replenished – LDP cost-share	0.00	0.99	0.15	2.67	4.72	8.00	0.00		
Cumulative total of water replenished	0.00	2.00	2.14	4.81	9.53	17.52	17.52	17.52	12.00
Cumulative total, directly financed by LDP	0.00	0.99	1.14	3.81	8.53	16.53	16.53	16.53	12.00



Overview of restoration projects

NEUSIEDLER SEE • AUSTRIA / Neusiedler See National Park

Soda lakes are a rare type of wetlands that support unusual wildlife, including seabirds many kilometers from the sea. In Europe, they only exist in the Pannonian Basin, stretching from eastern Austria across Hungary to Serbia. Hundreds of the lakes have lost their unique character due to man-made interventions, including drainage. By installing a system of sluices, the Danube Partnership has raised the level of groundwater, preventing some of the soda lakes from drying out.

The successful project – the first to be completed under the Living Danube Partnership in 2016 – has inspired local stakeholders to undertake additional interventions to save other soda lakes in the area, including preparation of a large EU LIFE project for soda lake restoration by the Neusiedler See National Park; and a restoration project for 6 small soda lakes, submitted to the EU LEADER programme in partnership with the local hunting association.

ŠIROKI RIT • SERBIA / Mura-Drava-Danube Biosphere Reserve

Since the second half of the 18th century, Široki Rit in northern Serbia was free of forest vegetation thanks to regular flooding. This changed in the second half of the 20th century, when efforts to regulate the Danube prevented regular flooding and led to gradual drying and siltation of the area. Widening and deepening the existing supply channel and slightly dredging the lake has given the area the possibility to fulfil its primary ecological function as a breeding and spawning area for waterfowl, fish and amphibians and a stopover for migrating birds. The area has attracted an additional nesting pair of rare White-tailed eagles since completion of restoration works in 2017.

Overview of restoration projects

BARCS OLD DRAVA OXBOW • HUNGARY/CROATIA

Mura-Drava-Danube Transboundary Biosphere Reserve

Several oxbows have been created as a result of natural as well as man-made changes to the main channel of the Drava River. The Barcs Old Drava, the longest side-branch of the river in Hungary (15 km), has suffered from declining water levels that have hurt the ecology of the area as well as fishing. The Living Danube Partnership contributed co-financing for an EU-funded project to restore water levels and floodplain forest habitats through construction of a bottom-weir (with fish pass) and to improve infrastructure for angling. The intervention, which was completed in 2017, involved cross-border cooperation with Croatia.

DRAVA RIVER SIDE ARMS • CROATIA

Mura-Drava-Danube Transboundary Biosphere Reserve

In many places along the Danube and Drava rivers, natural side arms have been historically separated from the main channel. These man-made modification lead to negative results including the deterioration of the side-arm ecology, the loss of effective floodplain and the increased riverbed incision of the main river channel mainly due to changed river flows and reduced sediment transport. Co-financing from the Living Danube Partnership is leveraging EU support – the first EU LIFE Nature-funded project in Croatia -- to restore six side-arms of the Drava River in Croatia. The project, which is led by the Croatian Water Authority, is designed to give the Authority experience in 'natural' river management while helping Croatia comply with the EU Water Framework Directive and the requirements of the EU Habitats and Birds Directives. To date, detailed planning has been completed, but implementation has been delayed by permitting procedures and the Covid-19 pandemic and is not expected to be completed until 2023. Two riverine species have been reintroduced to the area and habitat monitoring is ongoing.

Overview of restoration projects

LANKÓC FLOODPLAIN FOREST • HUNGARY

Mura-Drava-Danube Transboundary Biosphere Reserve

The overall goal of the project is to reduce riverbed degradation of the Drava River through changes to the existing river regulation structures and management. This will improve the status of riverine and floodplain habitats and, among other benefits, improve the water supply of the Lankóc Floodplain Forest. Through staff costs to initiate and prepare the project as well as very limited co-financing (€5,938), the Living Danube Partnership has leveraged significant EU funding for project activities (€1.85 million). Construction of six water-regulation measures is expected to be completed in autumn 2020.

RUSENSKI AND CHERNI LOM RIVER • BULGARIA

Lower Danube Green Corridor

Many dams and other man-made barrages in Bulgaria do not have any or only inadequate fish passes. As a result, the natural free movement of fish has been severely restricted or stopped. The Living Danube Partnership provided co-financing for an EU-funded project that in 2017 restored over 120 km of river connectivity, including removal of 2 barriers and construction of a new fish pass. The pioneering project is being used to pilot and promote good practice in design and construction of fish passes in Bulgaria to permit the free movement of fish and restore endangered fish populations. Project activities have also included re-stocking of fish populations as well as education and awareness.

Overview of restoration projects

PERSINA MARSH • BULGARIA / Lower Danube Green Corridor

Persina is the largest of the Belene islands, a complex of Danube islands in Bulgaria that are characterized by freshwater marshes, seasonally-flooded riverine forests and agricultural lands that are exceptionally rich in biological diversity. Protected as a Ramsar wetland site and part of the EU's Natura 2000 network of specially protected sites, the Belene complex hosts rare plants and globally threatened birds such as the Dalmatian pelican (*Palecanus crispus*). Improvements to the system of sluices controlling water supply to the area that were completed in 2019 have improved regulation of water in the marshes of Persina Island (which is also home to a prison). Specially constructed platforms in the marsh have already been taken over by flocks of pelicans.

KALIMOK MARSH • BULGARIA / Lower Danube Green Corridor

For centuries Kalimok marsh, located to the west of the town of Tutrakan in northern Bulgaria, was one of the most important sites for commercial fishing in the Lower Danube. This changed after the marsh was drained and separated from the Danube in the 1950s, leading to a steep decline in fish production. Attempts to farm the area proved unsuccessful, so fish ponds were established, but by the 1990s these also had been abandoned. In 2007, new sluices were installed to reconnect the marsh to the Danube. With support through the Living Danube Partnership, in 2019 the water management system was optimised in the Kalimok marsh complex, which is now protected under both national and EU legislation. Wetland restoration in Kalimok and the nearby Persina marshes together has delivered some 7 million m3 in replenishment, i.e. well over half of our original target.

Overview of restoration projects

GÂRLA MARE • ROMANIA / Lower Danube Green Corridor

The Garla Mare and Vrata restoration projects in Romania are together expected to generate as much or even more replenishment benefits as Persina and Kalimok in Bulgaria. Garla Mare is an area of marsh covering about 700 ha in a former side branch of the Danube River. Historically, the area was modified for fish farming, isolating the natural marsh from the river and dividing it with dykes. The water inundation of the area will be improved through modification of a water supply channel. Some dykes will be reinforced to protect active fish ponds against flooding, and reed-beds will be managed to improve the dynamics of the wetland habitat. Significant delays were caused by unexpected inconsistencies in the land cadastre. These have now been overcome and permitting is nearly complete, opening the way to implementation of measures in autumn 2020. The Garla Mare project is funded exclusively through the Living Danube Partnership and is expected to increase capacity for water retention by 5.2 million m^3.

VRATA • ROMANIA / Lower Danube Green Corridor

Adjacent to and separated by a dyke from the Garla Mare wetlands, the Vrata site is similar in size and volume to its neighbour. A scoping study including modeling of a potential technical solution indicates a replenishment potential of between 2.8 and 6.7 million m^3 of water depending on elevation of the terrain. The site also has added value due to the openness of the land concessionaire to develop his business based on the restoration work. Two sluices to the adjacent Garla Mare site will be installed. The site has only recently entered the pipeline of wetland restoration projects after analysing the restoration potential along the Lower Danube in Romania. It was chosen in preference to the Cetate restoration site, which had promising potential for wetland restoration but unclear and complicated land ownership that would have risked delays of completion.

Promoting a movement for wetlands

Beyond wetland restoration, the Living Danube Partnership seeks to promote a movement for wetlands in the Danube basin.

The focus is at three levels:

- Promotion and local stakeholder involvement around individual restoration sites and activities.
- Outreach to a wider audience, particularly young families, through organisation of a mobile exhibit, special events as well as through ongoing media, social media and internet.
- Advocacy and promotion of wetland conservation and restoration and water stewardship among experts and decision makers.

Progress to date

56 million people have been reached with a message of rivers, wetlands and restoration

86 thousand people have been directly involved in events.

Results to date and planned	Actual by FY2020 (cumulative)	FY2021 (plan)	By FY2021 (plan, cumulative)	FY2021 targets
# of people involved in restorations	1,995	300	2,295	2,100
# of people involved in events	86,094	50,000	136,094	120,000
# of people reached indirectly	56,120,936	12,000,000	68,120,936	5,000,000
# of expert publications	2	2	4	4
# of videos	22	5	27	5

We are on track or have already exceeded our targets related to outreach and awareness raising.

Last year we further exceeded our original target for outreach (people reached indirectly via internet as well as traditional and social media), with over 46 million people reached through various channels compared with a 5 million target over the 7-year partnership. This was helped by a number of freshwater-related issues that we could use for communications and awareness, including a month-long joint communications campaign with Coca-Cola in September 2019 and the Europe-wide campaign to defend the EU Water Framework Directive.

In contrast, our engagement of people, particularly young families, through events was modest (8,094 vs 30,000 target for the year). This was largely due to the COVID-19 pandemic, which since March 2020 has forced the cancellation of festivals and other events that we had planned to attend. The resulting substantial cost savings will permit us to step up our engagement in 2020-21.

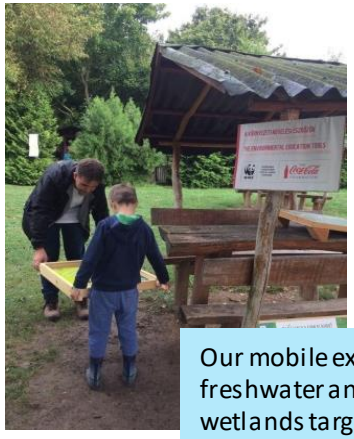
Our outreach to decision-makers continued, particularly through the official meetings of the International Commission for the Protection of the Danube River, some of which had to take place online.

A year of activity – cut by COVID-19

Many of our plans to participate in music and film festivals were frustrated by the COVID-19 pandemic. One event that did take place was the Big Jump in July in Hungary.

Coca-Cola added its voice to WWF and over 100 other organisations in defence of the EU's landmark water legislation.

In September 2019 we joined forces with Coca-Cola Europe to promote wetlands and the work of the Living Danube Partnership in traditional and social media.



Our mobile exhibit on freshwater and wetlands targeted young families, including interactive learning activities.

In October 2020 together with Coca-Cola Romania we organised a seminar on water and wetlands for the company's partners and employees. – a pilot for further business-targeted events planned for 2020-21.

Official meetings of the ICPDR continued to provide the best opportunities for advocacy and experience sharing with relevant decision-makers and experts across the Danube basin.

The power of partnership

The Living Danube Partnership presents a unique model of cross-sectoral cooperation.

The long-term commitment and relationship of trust between the partners and focus on achieving overarching objectives and targets has provided the flexibility needed to realise technically complex and by their nature uncertain wetland restorations involving different landowners and users, authorities and other interests.

A steering group composed of representatives of the partners meets twice per year to review progress toward the targets and approve plans and budget allocations for the next year. They review the pipeline of restoration projects and other initiatives, deciding on adaptive management or additional activities where relevant.

Thanks to this flexible approach, the partnership has been able to adapt to inevitable challenges, including delays or dead ends where barriers to achieving wetland restoration have proven insurmountable. It has also been able to respond to opportunities, including leveraging significant additional support and activities for wetlands well beyond that originally envisaged. To date, the Living Danube Partnership has leveraged some €20 million in support for wetland and river restoration and related activities, including €7.65 million in direct support (e.g. by co-financing EU-funded projects) and €11.33 million indirectly (e.g. through provision of staff time for development of proposals).

€20 million

The Living Danube Partnership has leveraged €20 million for river and wetland restoration.

Looking forward

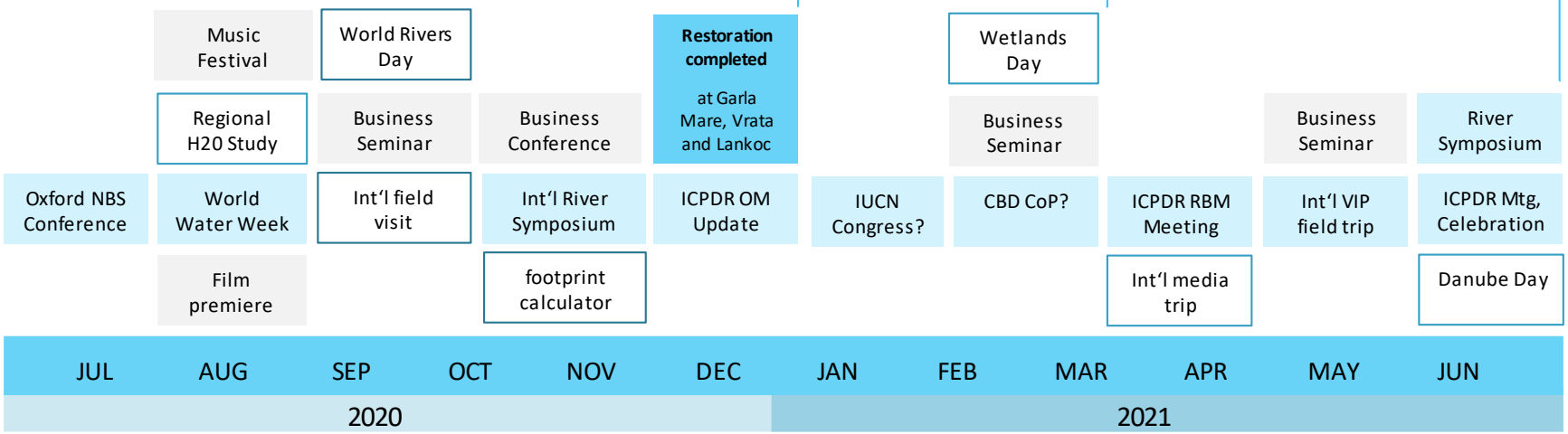
The final year of the Living Danube Partnership will be packed. Our focus will be both on pulling through and promoting the river and wetland restoration already planned as well as on leveraging these results for greater impact in the Danube basin and beyond. The ongoing Covid-19 pandemic has led to complications and some delays, but we remain confident that we will achieve activities and results by the end of June 2021 as planned.

Special events will be used to directly engage the public as well as targeted stakeholders such as the private sector on the importance of water and wetlands. Some of the events, including a business conference and seminars, are already planned to take place partly or wholly online. Original plans to focus on summer music festivals have been reduced to one festival that is still planned in Hungary.

Completion of the Garla Mare and Vrata projects in autumn 2020 will deliver major contributions toward our targets for water replenishment and wetland restoration. Restoration of the Lankoc forest floodplain is expected around the same time, while completion of restoration of the Drava side arms will take until 2022-23.

Thanks to the COVID-19 pandemic, there will be a relatively stronger focus on outreach via traditional and social media, focused around project milestones including completion of wetland restoration, the launch of a water footprint calculator or World Rivers Day and other anniversaries. A study on water will provide another touchpoint in the late summer.

A major focus will be sharing our results and experience with decision makers, experts and other stakeholders, mostly through conferences like the World Water Week. Official meetings of the ICPDR will provide opportunities to reach relevant decision makers and experts in the Danube basin.



The Living Danube Partnership contributes to Sustainable Development Goals 6, 13 and 15

and anticipated results

Living Danube Partnership targets

>130,000

>120,000

People directly engaged

>16 million m³

>12 million m³

of water replenished

>68 million

>5 million

people reached

>5,996 ha

>5,327 ha

of wetlands restored

+ >$20 million

leveraged for wetland restoration

+ pioneering initiatives

for wetland restoration, fish passes, biodiversity, climate resilience and cross-sectoral partnerships

WWF-CEE
Ottakringer Strasse 114–116 | A-1160 Vienna, Austria
office@wwfcee.org www.panda.org/cee

WWF-CEE gratefully acknowledges funding support from the European Commission. All content and opinions are solely those of WWF-CEE.