River Basin Management Cycle Training Series

Case Study – Danube River Basin

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INDIA-EU WATER PARTNERSHIP

Danube basin

Source: ICPDR

- 800,000 km²
- 19 countries
- 14 of those, together with the European Union, are contracting parties of the ICPDR.
- Considered as the most international river basin in the World.

The International Commission for the Protection of the Danube River (ICPDR) – Legal foundation

ICPDR IKSD
International Commission for the Protection of the Danube River
Internationale Kommission zum Schutz der Donau

The overall legal instrument for co-operation and transboundary water management in the Danube River Basin is The Danube River Protection Convention (DRPC).

Its main objective is *to ensure that surface waters and groundwater within the Danube River Basin are managed and used sustainably and equitably.*

This involves:

- Ensuring sustainable water management
- Ensuring conservation, improvement and rational use of surface waters and groundwater
- Controlling pollution and reduce inputs of nutrients and hazardous substances
- Controlling floods and ice hazards

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The International Commission for the Protection of the Danube River (ICPDR) – Legal foundation

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The signatories to the DRPC have agreed to co-operate on fundamental water management issues by taking:

"all appropriate legal, administrative and technical measures to at least maintain and where possible improve the current water quality and environmental conditions of the Danube river and of the waters in its catchment area, and to prevent and reduce as far as possible adverse impacts and changes occurring or likely to be caused."

- In 2000, the EU Water Framework Directive (WFD) came into force, establishing a legal framework to protect and enhance the status of aquatic ecosystems, prevent their deterioration, and ensure the long-term, sustainable use of water resources throughout the EU.
- In response, the 15 Contracting Countries of the ICPDR, including the 5 non-EU Member States (MS), agreed to implement the WFD throughout the entire basin.
- The contracting parties made the ICPDR the facilitating platform to coordinate WFD-related work.

The International Commission for the Protection of the Danube River (ICPDR) – Coordination structures

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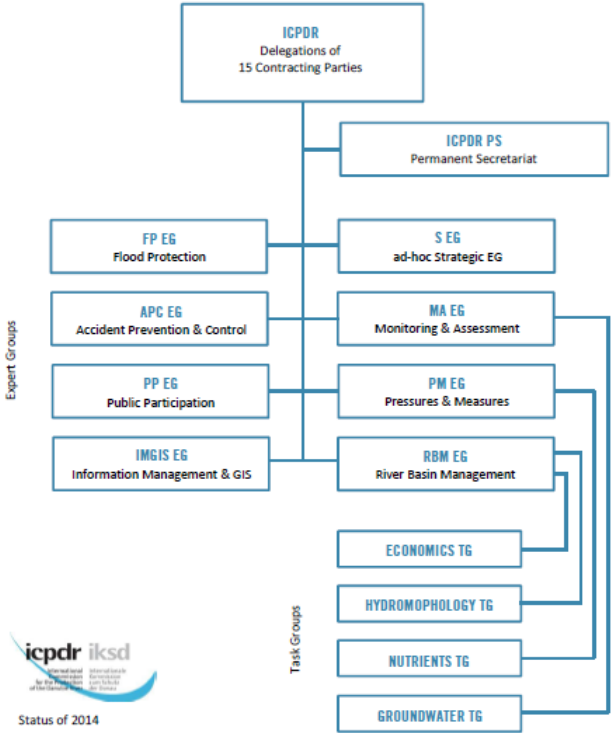

Status of 2014

- **Executive decisions:** Consensus between 15-member delegation representing the contracting parties to the DRPC
- **Implementation:** Mainly carried out by Expert Groups (7 permanent and 1 ad hoc)
- **The RBM Expert Group:** is divided into 4 Task Groups dealing with different aspects of RBM
- **Day to day operation:** The permanent secretariat based in Vienna

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The International Commission for the Protection of the Danube River (ICPDR) – Ensuring Stakeholder Participation

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In addition to the coordination structure, the ICPDR supports the active engagement of stakeholders (including civil society and NGOs, private sector, business interest groups, scientific institutions, other regional/international organizations, etc.) through:

- Official observer status/involvement in decision-making and implementation
- Formal MoUs establishing specific cooperations (e.g. with the BSC)
- Formalized consultation processes on specific issues (e.g. basin management plan)
- Public awareness events (e.g. Danube Day, Danube Art Master)
- Collaboration on education (e.g. Danube Box)
- Partnerships on specific issues (e.g. with Borealis, VERBUND, Coca Cola)

The International Commission for the Protection of the Danube River (ICPDR) – Ensuring Stakeholder Participation

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Additionally, all steps of the development of the DRBMP (basin analysis, identification of key water management issues, drafting of plan, drafting of PoM) are accompanied by public consultation. Detailed schedule is set up that allows several months for stakeholder feedback - done through meetings/workshops and online comment opportunities on documents/submission.

Timetable for latest DRBMP:

- Publication of work plan 12/2012
- Comments and endorsement (06/2013)
- Consultations on significant water management issues (until 06/2014)
- Consultation on draft DRMBP (until 06/2015)
- Finalization of plan (end 2015)

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The International Commission for the Protection of the Danube River (ICPDR) – DPSIR Basin Characterisation

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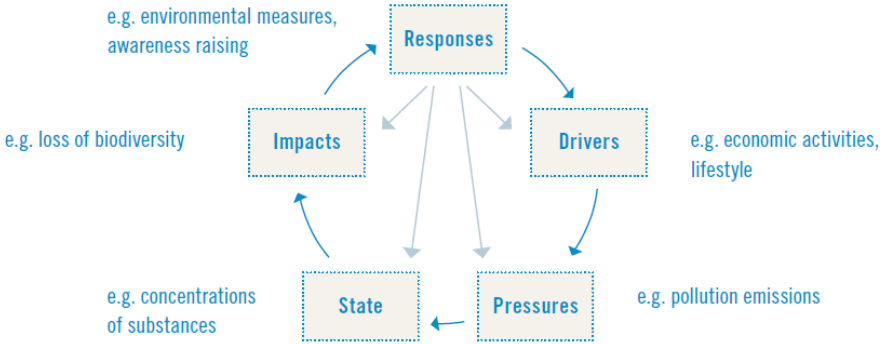
Current DRBM Plan is determined by the requirements of the WFD and related to the Drivers-Pressures-State-Impact-Response (DPSIR) Framework. This was applied primarily to the 4 identified Significant Water Management Issues (SWMIs) in the Danube Basin:

- Pollution by organic substances
- Pollution by nutrients
- Pollution by hazardous substances
- Hydromorphological alterations



These issues relate to the impacts on the ecological and chemical status of surface waters. For transboundary groundwater bodies, both, qualitative and quantitative issues are addressed.
The analysis of the **Pressures, State** and **Impacts** is combined with the objectives and exemption of the EU WFD and used to draw up the **Responses**, which form the Joint Programme of Measures (JPM).

The International Commission for the Protection of the Danube River (ICPDR) – Example of using DPSIR to protect of a flagship species

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Sturgeon – flagship indicator fish species at top of aquatic food chain. Their well-being thus depends on many aspects of successful RBM. A DPSIR analysis for sturgeon was carried out:

- **DRIVERS:** Industrial development, transport, energy generation, agriculture, human settlements
- **PRESSURES:** Wastewater pollution, nutrient and pesticide pollutions, modification of river course, illegal fishing
- **STATE:** High nutrient load in water, straightened channels, less biodiversity in the river
- **IMPACT:** Decreased food sources for sturgeon, decreased habitat and interrupter migration routes, observed decline in all sturgeon populations. Of the 6 sturgeon species: 1 extinct, 1 vulnerable, 4 critically endangered
- **RESPONSE:** Pollution reduction, restoration of habitats, improved hydropower, navigation and flood protection infrastructure to open migration routes

The International Commission for the Protection of the Danube River (ICPDR) – Monitoring across the Basin

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The DRPC has provisions on monitoring requiring the Contracting Parties to monitor the progress of joint action programs and requirements in connection with domestic activities to cooperate in monitoring and assessment by:

- Harmonise monitoring and assessment methods at domestic levels, to achieve comparable results for joint monitoring and assessment activities;
- Develop joint monitoring systems with measurement devices, communication and data processing facilities;
- Elaborate and implement joint monitoring of riverine conditions for both water quality and quantity, sediments and riverine ecosystems;
- Develop joint methods for monitoring and assessment of waste water discharges including processing, evaluation and documentation of data;
- Elaborate inventories on relevant point sources including the pollutants discharged (emission inventories) and estimate the pollution from non-point sources;
- Review these existing documents according to the actual state.

The International Commission for the Protection of the Danube River (ICPDR) – Monitoring efforts

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In the Danube River Basin, data acquisition and analysis includes:

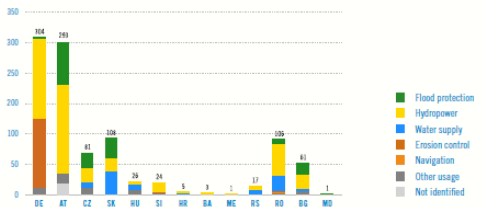
- Danube Basin Analysis (state of the basin, human activities, impacts, economic water use)
- Identification of pressures in DRBMP – basis for identification of specific monitoring needs
- Trans-National Monitoring Network (TNMN) with specific parameters
- Specific monitoring efforts (Joint Danube Survey)
- Mechanisms for sharing data between ICPDR member countries (DANUBIS)
- Mechanisms for sharing analyses results with other actors and the general public

→ **data and analyses are the basis for science-based and informed decision-making**

Table 1: List of monitoring sites

No.	Country code	DEFF Code	New TNMN code	River	Name of site	Locations	x- coord.	y-coord.	River-km	Altitude	Catchment
1	DE	L2130	DE2	Danube	Jochenstein	M	13.703	48.520	2 204	290	77 086
2	DE		DE5	Danube	Dillingen	L	10.499	48.568	2 538	420	11 315
3	DE	L2150	DE3	/Inn	Kirchdorf	M	12.126	47.782	195	452	9 905
4	DE	L2160	DE4	/Inn/Salzach	Laufen	L	12.933	47.940	47	390	6 113
5	AT	L2220	AT1	Danube	Jochenstein	M	13.703	48.521	2 204	290	77 086
6	AT		AT5	Danube	Enghagen	R	14.512	48.240	2 113	241	84 869
7	AT	L2180	AT3	Danube	Wien-Nussdorf	R	16.371	48.262	1 935	159	101 700
8	AT		AT6	Danube	Hainburg	R	16.993	48.164	1 879	136	130 759
9	CZ	L2100	CZ1	/Morava	Lanzhot	M	16.989	48.687	79	150	9 725
10	CZ	L2120	CZ2	/Morava/Dyje	Pohansko	M	16.585	48.723	17	155	12 540
11	SK	L1840	SK1	Danube	Bratislava	LMR	17.107	48.138	1 869	128	131 329

Number of barriers and associated main uses FIGURE 25



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The International Commission for the Protection of the Danube River (ICPDR) – Water Quality Assessment

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Joint Danube Survey (JDS)

- Until today four JDS were conducted in 2001, 2007, 2013 and 2019.
- Largest river examination of its kind with high data quality.
- The results also serve as the basis for undertaking policy initiatives.

Key Objectives of the JDS

- Production of **reliable and comparable information** on carefully selected elements of water quality for the length of the Danube River, including its major tributaries.
- **Harmonisation of water monitoring practices** and procedures in accordance with the EU Water Framework Directive (WFD) through close coordination and further training.
- Implementation of the the Danube River Protection Convention.

Source: URL http://www.danubesurvey.org/

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The International Commission for the Protection of the Danube River (ICPDR) – Water Quantity Assessment

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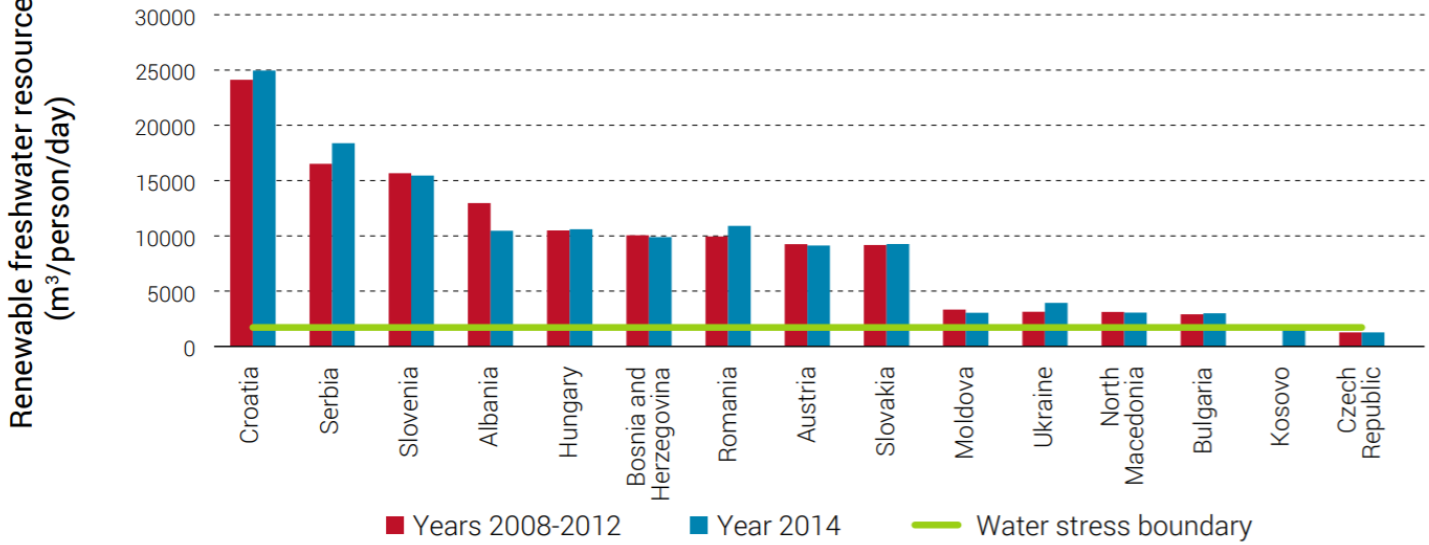
In certain parts of basin competition for water resources between users is a serious challenge with the irrigation sector being the largest consumer in the basin. The commission strives towards a sustainable balance between the various water uses and the natural movement of water through the whole basin.

- A harmonised methodology for **national water balances** was developed in cooperation with UNESCO IHP. The Danube River Protection Convention obliges each country to establish domestic water balances contributing to a general water balance for the whole Danube River Basin.
- A first **basin wide water balance** for the whole Danube River Basin was presented in 2005 including water balances for the main tributaries.

Danube River Basin – Water Quantity Assessment

The water resources in the Danube River Basin are not evenly spread, and there are significant differences among different parts of the basin. The Czech Republic and Kosovo are the only countries in the region that can be categorized as **water stressed**, with a yearly renewable water resources per capita below the threshold of 1,700 cubic meters.

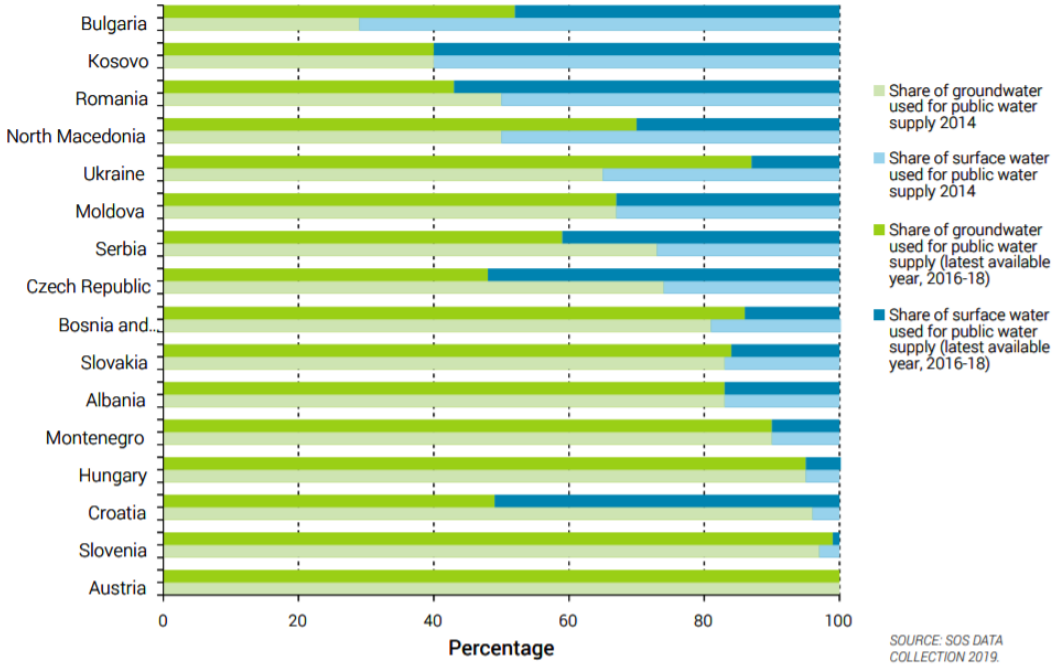
Renewable freshwater resources per capita per country in the Danube Region



Source:
Danube Water Program (2019)

Danube River Basin – Water Quantity Assessment

Ratio between ground and surface water as water supply source in the Danube Region

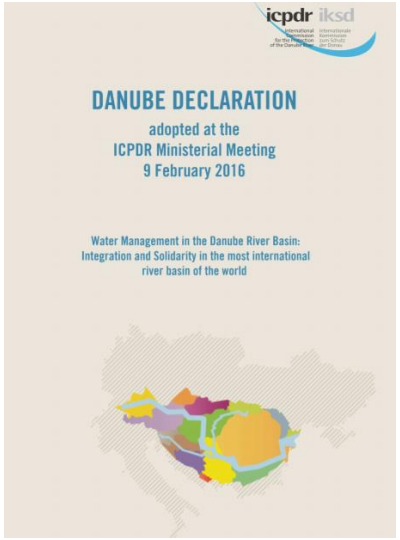


For most countries in the region, **groundwater remains the major source** for drinking water production.

Source: Danube Water Program (2019)

The International Commission for the Protection of the Danube River (ICPDR) – Basin Vision

The **Danube Declaration 2016** was adopted at the third Meeting of Ministers with representatives from the 14 Danube River Basin countries and the European Commission.



The declaration

- constitutes the main **coordinating mechanism** for transboundary water management
- outlines the path towards a **cleaner, healthier** and **safer** Danube River by 2021
- highlights the following topics
  - The updated Danube River Basin Management Plan (DRMP)
  - The Danube Flood Risk Management Plan (DFRMP)
  - Lessons learnt and future challenges
  - Danube Sturgeons – the flagship species
  - Synergies and fostering cooperation

CLEANER

Reduced pollution from settlements, industry and agriculture

HEALTHIER

habitats and ecosystems for aquatic plants and animals

SAFER

waters free from harmful substances and accidents

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The International Commission for the Protection of the Danube River (ICPDR) – Management Objectives

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Visions and management objectives have been developed for each of the four identified Significant Water Management Issues (SWMI) and groundwater.

- **Organic pollution** (SWMI1): **Zero emissions** of untreated wastewater into the basin's rivers.
- **Nutrient pollution** (SWMI2): **Balanced management** so neither the waters of the Danube Basin nor the Black Sea are threatened or affected by eutrophication.
- **Hazardous substances** (SWMI3): **No risk** or threat to human health or the aquatic ecosystem.
- **Hydromorphological alterations** (SWMI 4): Balanced management of structural man-made changes (…). Reconnection and **restoration of wetlands** throughout the basin. The natural development and distribution of the aquatic ecosystem are not negatively influenced by altered water quantity and flow conditions. Infrastructure projects are conducted transparently using **best environmental practices** and **best available techniques**. Negative transboundary effects are fully prevented, mitigated, or compensated.
- **Groundwater:** Emissions of polluting substances do not cause any deterioration of groundwater quality. Water use is appropriately balanced and does not exceed the available resources**.**

The International Commission for the Protection of the Danube River (ICPDR) – Implementing RBM

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Snapshot on the Management of Sewage in the Basin

- As of 2018 about 90 million Population Equivalent (PE) of the Danube River Basin generate more than **10 million m3 of wastewater each day.**
- The majority of this wastewater amount is collected by public sewers or handled by adequate local technologies (80%) and treated in **centralized treatment plants** (73%). The remaining part still needs to be appropriately collected and treated.
- There are about 250 large industrial facilities in the Danube River Basin, which release significant pollutant emissions into surface waters, and which must ensure that the applied technologies are in line with the **best available techniques (BAT)** requirements.
- Since 2006, Danube countries have invested more than €22 billion in wastewater infrastructure.
- Since 2006 almost 5,000 municipalities and almost 40 million PE have had collecting and treatment facilities constructed or upgraded, with over 2,000 more planned or currently in progress to improve the services for 25 million people.
- Nearly 400 industrial facilities have been certified with updated technology standards.

→ At this rate, levels of organic pollution are set to decrease significantly in the years to come.

The International Commission for the Protection of the Danube River (ICPDR) – Implementing RBM

Each Danube country is responsible for **financing the projects** within its territory. Over 20 billion Euro have been invested in water treatment facilities alone. It proves to be more cost-effective to prevent environmental deterioration.

EU Member States can seek financial support from the EU through specific funds. These include:

- **European Regional Development Fund (ERDF):** Aimed at economic, social, and territorial cohesion in the EU.
- **European Social Fund (ESF):** The main EU financial instrument for investing in employment opportunities, education, help for vulnerable people, and the environment.
- **Cohesion Fund (CF):** Supports investments in TEN-T transport networks and the environment in EU Member States with below-average Gross National Income.
- **European Agricultural Fund for Rural Development (EAFRD):** Finances the Rural Development and Agri-Environmental Programs of the EU Common Agricultural Policy.
- **European Maritime and Fisheries Fund (EMFF):** Supports marine and fisheries policies in the EU.

The International Commission for the Protection of the Danube River (ICPDR) – Implementing RBM

The following programs are available to **non-EU Member States**:

- **European Neighbourhood Instrument (ENI):** Provides direct support for the EU´s external policies, including environmental protection.
- **LIFE:** Entirely devoted to environmental objectives.
- **Instrument for Pre-Accession Assistance (IPA)** Provides assistance for building institutions and cross-border cooperation.
- **INTERREG Europe** Helps regional and local governments across Europe develop policies to protect the environment and improve resource efficiency.

Other **cost recovery measures** in the basin include:

- The '**polluter pays** and **user pays' principle**
- In Slovakia, farmers pay 100 % of costs for the water they use, without state subsidies. This measure aims to **reduce the overuse** of water resources.
- Hungary's regulations encourage the efficient use of water through reintroduced fees in agriculture. Farmers pay for the water they use, along with a **water resource fee** and **service costs**

Video – The Danube River Basin and the ICPDR

Link: https://www.youtube.com/watch?v=8XmM6A1ALDY&t=58s (Duration 5:45 min)

Video – The ICPDR

Link: https://www.youtube.com/watch?v=9XIf-wPGyFY (Duration 4:45 min)

Video – Joint Danube Survey 4 of the Danube

Link: https://www.youtube.com/watch?v=so2_18tc_s0 (Duration 3:12 min)

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International Commission for the Protection of the Danube River (2020) Website. URL: https://www.icpdr.org/ (access date 15.01.2020)

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Joint Danube Survey (2020) Website. http://www.danubesurvey.org/ (access date: 15.01.2020)

Continued engagement pre and post webinar

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2. E-Learning platform - http://78.46.247.119/

(Temporarily hosted on AHT servers and will be transferred to the servers of training institutes.)

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