

Kick Off Meeting for the Preparation of the Management Plans for the Sava River Basin

13 May 2026, Zagreb



Welcome and opening of the meeting

ISBRC



Presentation of the project

Thomas Dworak
Project Coordinator
Fresh Thoughts Consulting



Project partners



Project lead and coordination,
River Basin Management plan



Flood Risk Management Plan



Hauer-Hydraulic-Consulting e.U

Sediment Management Plan



Objectives of the study

- Update the Sava RBMP and FRMP accompanying PoM
- Develop the first Sava Sediment Management Plan (SMP) with PoM
- Analyse and strengthen interlinkages between RBMP, FRMP, and SMP
- Develop a Joint Plan of Measures (JPM) for coordinated basin-wide implementation
- Prepare a methodology for monitoring and evaluating the implementation of measures.
- Design and implement a comprehensive stakeholder engagement process and public consultation campaigns to support the development of basin-wide plans.
- Develop a Follow-up Strategy on the Sava Planning Process as a structured and forward-looking framework that builds on the outcomes of the Plans to guide future actions.



Working together

- ISRBC share point for all public consultation, and interaction with stakeholders.
- Working sessions on certain topics depending on the needs.
- Intermediate workshop, to present and discuss the progress of the project and discuss the details of the stakeholder consultation.
- invite experts to continue communication after the KoM (moderated by ISRBC in the beginning).
- Strong exchange with other projects and initiatives.
- Training and capacity building with external experts depending on the needs requested.



Objectives of this meeting

- Present the planned activities
- Discuss the detailed timeline
- Agree on working methods
- Get feedback from participants on our approaches



Project timeline

Activity	Apr 26	Mai 26	Jun 26	Jul 26	Aug 26	Sep 26	Oct 26	Nov 26	Dez 26	Jan 27	Feb 27	Mar 27	Apr 27	Mai 27	Jun 27	Jul 27	Aug 27	Sep 27	Oct 27	Nov 27
Projekt Management																				
Intermediate Report I								D3												
Intermediate Report II													D5							
Montly Progress Reports/Final report	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8	D8/D7
Inception phase																				
Kick off meeting		Me1																		
Knowledge transfer programs																				
Stakeholder Strategy																				
Data Collection and Map Production strategy																				
Inception Report			D1																	
Sava RBMP Update																				
Sava FRMP																				
Sava SMP																				
Capacity Building																				
Stakeholder engagement																				
1st Stakeholder Forum						SF1	D2													
2nd Stakeholder Forum											SF2	D4								
Public consultation																				
Report on public consultation																				D6
Summary of the Plans																				
Joint Program of measures																				
Report on Monitoring																				
Comprehensive Interlinkages Analysis Report finalized																				
Interactive Webtool																				
Follow up Strategy																				





Proposed approach for the plan development

Your input is needed!

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Development of the 3rd
River Basin Management Plan
2028-2033
International Sava River Basin

Tanya Milkova, Fresh Thoughts Consulting



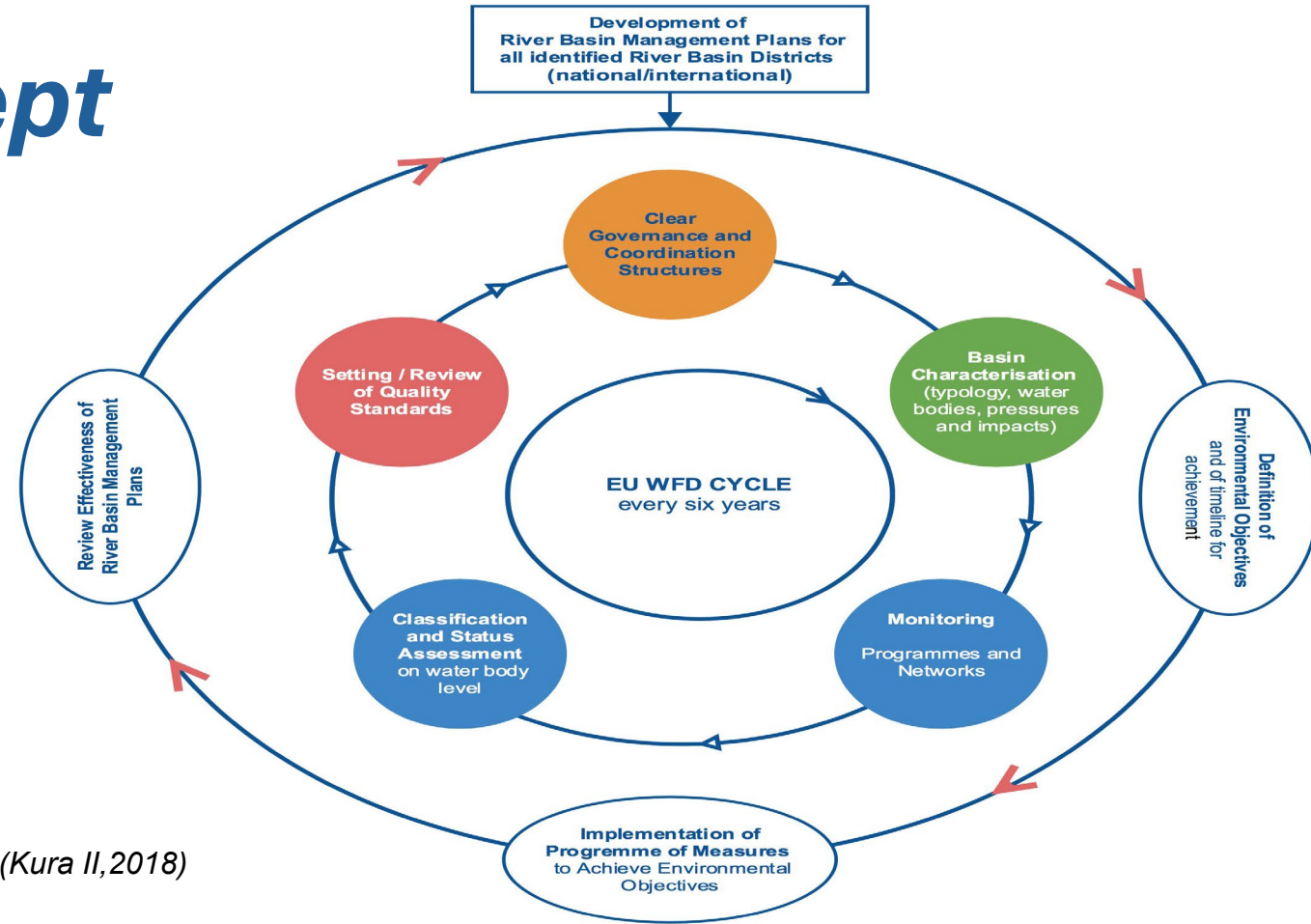
Contents

- RBMP from the WFD perspective
- *Methodological approach and work plan* for elaboration of the 3rd Sava RBMP
- *Current progress in front of the 3rd RBMP cycle*
- *Key gaps and challenges*
- **Points for clarification** – state of play of the planning process over the Sava basin riparian countries; needs and expectations





WFD Concept



WFD planning cycle (Kura II, 2018)

The WFD requires a consistent, coherent approach to the assessment, protection, and sustainable use of water resources.

A key cornerstone in this process - **reliable and comparable assessment** of the status, pressures, and impacts caused by human activities.



**Focus on integration with
the other sectoral policies**

to create synergies and
avoid potential conflicts in
implementation

Overall approach

3rd Sava RBMP

- **Review of:**

- the analyses and assessments carried out;
- the data set they use – scope and completeness;
- the methods and approaches applied.

- **In this review, we observe:**

- quality and completeness of the analyses and assessments carried out;
coherence among the countries
- compliance with the principal requirements of the current EC legislation.

- **Identification of gaps and inconsistencies**

- **Recommendations for overcoming them**

- **Synthesizing the information for the RBMP update:**

- structuring the information in data management templates;
- mapping.

- **Drafting the RBMP.**

Overall approach

3rd Sava RBMP

Information Ground:

- The 1st and 2nd Sava RBM plans and associated planning documents on the Sava basin level
- The latest (draft) national river basin management plans and other interim documents; background documents; national methodologies and data used
- Data from conducted scientific research, implemented projects, and other relevant information, where available
- Findings and recommendations from the EC assessment of the RBMPs for the riparian EU Member States.

Our approach

- Active ongoing interaction with ISRBC and the Sava countries, to achieve optimal coherence of the Sava plan with the updating of national plans within the project timeframe
- Integrating results from related ongoing activities within the framework of the SDIP:
 - Study on Sediment, Water and Biota in the Sava River Basin
 - Climate Change Adaptation Strategy for the Sava River Basin

"Win-Win" Solution: The findings and recommendations from the Inception Report can also be used in updating the national RBMPs.





Characterization

Ecoregions, Typology, Ref.conditions

Key Findings

The Sava River Basin falls into **4 ecoregions** (WFD, Annex XI)- basis for a more diverse typological characterization within the river basin.

Croatia and Serbia - **sub-ecoregions** to further differentiate the ecoregions

Typology - **4** of the Sava RB countries applied **System B** (WFD Annex II, 1.2.1); common types at RBD scale - not yet identified, for which an intercalibration procedure should be carried out to ensure a synchronized and comparable assessment of the ecological status. Surface waters of the "lake" category were not considered

Reference conditions – partially defined, for some BQEs; no progress has been indicated in the 2nd Sava RBMP on the definition of type-specific reference conditions for the defined surface waterbody types.

Ecoregion	SI	HR	BA	RS	M E
04 - Alps	x				
05 – Dinaric western Balkan	x	x	x	x	x
06– Hellenic western Balkan					x
11 - Hungarian lowlands	x	x		x	



Characterization

Ecoregions, Typology, Ref.conditions

Compliance with the EU legislative requirements

- Member States shall carry out an initial characterisation and differentiation of surface water types in accordance with the methodology provided in Annex II, 11 of the WFD.
- **Type-specific biological reference conditions**, as well as type-specific **hydromorphological** and **physicochemical** conditions, **shall be established for each of the relevant quality elements** (specified in WFD, Annex V, 1.1)

Questions for clarification

1. Does the agreed-upon scale of analysis for reviewing the characteristics of the Sava River Basin remain: rivers with drainage area above 1,000 km², lakes with a surface area above 50 km² and reservoirs with a volume above 5 mln m³?
2. Any updates on the validation or actualization of the SWB Types and their boundaries for the next RBMP cycle?
3. Current progress on the establishment of type-specific reference conditions - for biological quality elements, and supporting hydromorphological, and physicochemical quality elements; reference monitoring points?



Characterization

Surface waterbodies, SWB

Key Findings

Increased number of the SWBs in the 2nd Sava RBMP:

RBMP Cycle	Total No of SWBs	Sava River	Tributaries	Transboundary SWBs	
				Sava River	Tributaries
1 st Sava RBMP	195	28	167		
2 nd Sava RBMP	296	47	249	19	62

Countries' specific methodologies applied.

SWBs' dimensions are highly variable and inconsistent - lengths from 1 up to > 100 km

Compliance with the EU legislative requirements

- The Directive requires Member States to identify “water bodies” in a way that will provide for an accurate description of the status of surface water and groundwater (WFD CIS Guidance document No 2).

Questions for clarification

1. Providing the methodologies applied for delineation of the SWBs in the Sava 2nd RBMP.
2. Clarifying the issue specified in the 2nd RBMP with the harmonization of transboundary water bodies.
3. Clarifying the task for “Prepare updated sub-catchment delineation and proposal of drainage areas of updated water bodies”.



Characterization

Groundwater Bodies, GWB

Key Findings

Increased number of the GWBs in the 2nd Sava RBMP:

	Total No of GWBs	SI	HR	BA	RS	ME
1 st Sava RBMP	41	11	14	7	5	4
2 nd Sava RBMP	60	11	14	17	5	13

Countries' specific methodologies applied. The new delineation represents the result of the studies, research, and more detailed analysis at a national level towards better compliance with the WFD requirements.

Compliance with the EU legislative requirements

- The Directive requires Member States to identify “water bodies” in a way that will provide for an accurate description of the status of surface water and groundwater (WFD CIS Guidance document No 2).

Questions for clarification

1. Providing the methodologies applied for delineation of the GWBs in the Sava 2nd RBMP.
2. Any changes in the number/boundaries of groundwater bodies envisaged by the Sava countries in the updating of the national RBMPs?

Pressures and Impacts

Key Findings

The main types of pressure have been identified:

Pressure types SWB	Pressure types GWB
- point sources of pollution - diffuse source pollution - significant hydrological alterations, incl. water abstraction and flow regulation - morphological alterations Other Pressures: - Pressures on the quantity and quality of sediments; - Invasive alien species	- point sources of pollution - diffuse source pollution - water abstraction - artificial recharge

Sources of pollution

WWTP – comprehensive aggregated information presented for Urban wastewater collection, treatment, and pollution loads.

Other sources of pollution – point and diffuse (Industrial, agricultural) – indicated lack of a comprehensive inventory of the significant polluters for the Sava RB; no systematic data collection that would enable assessment of the nutrients load to the water bodies, from diffuse sources of pollution.

A few of the **priority substances and the specific pollutants**, collectively referred to as "hazardous substances," are considered



Pressures and Impacts



Key Findings

Criteria of the significant pressure from **hydrological alterations** are harmonized at the Danube RB level, while **morphological alterations** are identified using country-specific methodologies.

Pressures on Groundwater country-specific methodologies applied

Compliance with the EU legislative requirements

- Point sources of pollution are not associated with water bodies, i.e., the spatial distribution of pressure in the Sava River basin has not been considered.
- The WFD sets the water body as the basic unit of management. One of the key criteria for identifying water bodies is a similar type of pressure.

Questions for clarification

1. What is the current progress of the Sava countries on updating the review of anthropogenic pressures and impacts for the update of the national RBMPs? Expected deadlines?
2. Providing the methodologies applied in the Sava 2nd RBMP and since then
3. Has an inventory of emissions of priority substances been carried out or planned for the next RBMP, in accordance with the Guidance Document No. 28 "Technical Guidance on the Preparation of an Inventory of Emissions, Discharges and Losses of Priority and Priority Hazardous Substances"?

Protected areas



Key Findings

WFD requirements – fully transposed by all riparian countries fully,

Implementation status and further harmonization differ within the basin:

- different status of NATURA 2000 network designation within the countries,
- different harmonization level with EU legislation,
- lack of registers and/or effective databases of protected areas in non-EU countries,
- shared responsibilities between national competent authorities

2nd Sava RBMP - preliminary register of protected areas:

- for protection of habitats and/or species;
- for abstraction of drinking water - groundwater.

Questions for clarification

Current progress of the Sava countries on the Implementation status of the establishment of registers of protected areas, the Natura 2000 network designation and maintenance, and progress with harmonization with the EU legislation.



Monitoring programmes SWBs, GWBs, Protected Areas

Key Findings

Progressive work is underway in all Sava RB countries towards the establishment of SWB and GWB monitoring programmes aiming at a coherent and comprehensive overview of water status within each river basin district.

Compliance with the EU legislative requirements

The general information provided does not allow for an assessment of the compliance of existing monitoring programmes with the principle requirements of the WFD.

Questions for clarification

Providing the SWB and GWB monitoring programmes and the respective justifications/background documents, related to the 2nd RBMP, and updated.

Status and Risk assessment



Key Gaps and uncertainties specified in the 2nd RBMP

SWBs

- Methodologies used for the ecological status assessment differ per countries
- Methods for assessment of the ecological potential are not developed in all Sava RB countries
- Still existing gaps in the availability of reliable monitoring data
- In some countries monitoring schemes are not in the full compliance with WFD requirements

GWBs

- WFD complied methodologies for the GWB status assessment are not developed in all basin countries
- Still existing gaps in availability of reliable monitoring data for quantitative and chemical status assessment

Questions for clarification

Providing national methodologies and data, and the respective background documents for the SWB and GWB status assessment



RBMP – Economic analysis

Objective: Update of the economic analysis of water uses to demonstrate that environmental objectives of the RBPM are achieved in a cost-effective manner, building on the 2nd RBMP and benchmarking against European best practices

- 5-step approach:
 - *Legal and policy analysis*
 - *Socio-economic characterisation*
 - *Core economic assessment*
 - *Economic assessments of measures*

Data collection & stakeholder input



Questions for clarification

Availability of relevant data (RBMP assessment, PoM costs/effectiveness, pollution costs, pricing & cost-recovery, demand projections, affordability) to support the analysis

Key challenges in updating the RBMP

- Alignment of the timeframes for updating the Sava RBMP with the national RBMPs, resp. providing national data and assessments
- Timely receipt of the necessary data and information (assessments, methodologies, supporting documents) for the consistent development of the individual sections of the RBMP
- Systematization of data and information sets in a unified format
- Completeness of the available data and information



Points for clarification

1. Agreeing on the **data period** on which the development of the 3rd Sava RBMP will be based
2. What is the current progress of the Sava countries on updating the national RBMPs? Deadlines?, Agreeing on the **cut-off date for providing national data** to be integrated in the 3rd Sava RBMP.
3. **Deadline for submission of the national data**, acc. to the List of information and data needs prepared by the Consultant? Any challenges?
4. Does the agreed-upon **scale of analysis** for reviewing the characteristics of the Sava River Basin remain: rivers with drainage area above 1,000 km², lakes with a surface area above 50 km² and reservoirs with a volume above 5 mln m³?
5. Any updates on the **validation or actualization of the SWB Types** and their boundaries for the next RBMP cycle?
6. Current progress on the establishment of **type-specific reference conditions** and **classification schemes** - for biological quality elements, and supporting hydromorphological, and physicochemical quality elements?
7. Any **changes in the number/boundaries of SWBs and GWBs** envisaged by the Sava countries in the updating of the national RBMPs?



Your input is needed!

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Updating the Sava Flood Risk Management Plan (FRMP)

Dr Darren Lumbroso, HR Wallingford



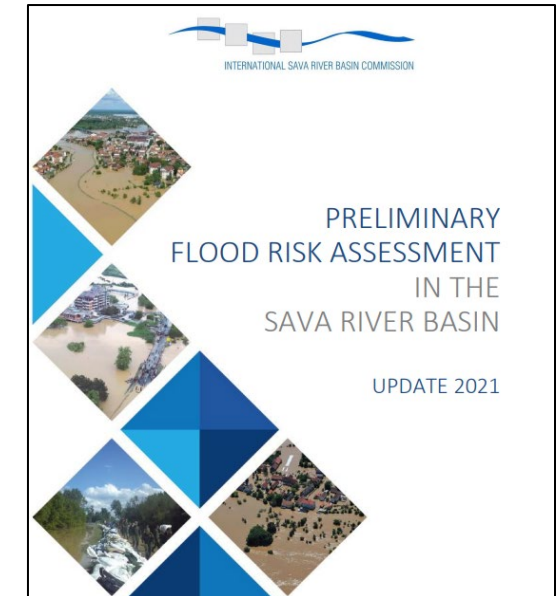
Structure of the updated Sava Flood Risk Management Plan (FRMP)

- **Introduction:** Purpose and scope of the update; Overview of legislative and policy frameworks; Competent authorities and mechanisms of coordination at the basin level.
- **Description of the Sava River Basin:** Update the basin description, focusing on changes between Flood Directive cycles (e.g. land use, climate, socio-economic).



Structure of the updated Sava FRMP

- **Updates from the Preliminary Flood Risk Assessment (PFRA) 2021:** Updates from Sava and national PFRAs; Changes in Areas of Potential Significant Flood Risk (APSFRs) and implications for flood risk management; Areas of Mutual Interest (AMIs).
- **Findings from updated Sava Flood Hazard and Risk Mapping (FHRM) 2024:** Methods; Consequences on human health, environment, economy, and cultural heritage.



Structure of the updated Sava FRMP

- **Objectives of flood risk management:** Assess the progress towards the flood risk management objectives from the 1st FRMP; Reassess objectives based on new data and risk assessments.

Prevention

- Avoiding or removing a flood risk

Protection

- Reducing the likelihood and/or severity of flood events

Preparedness

- Reducing the consequences of flooding



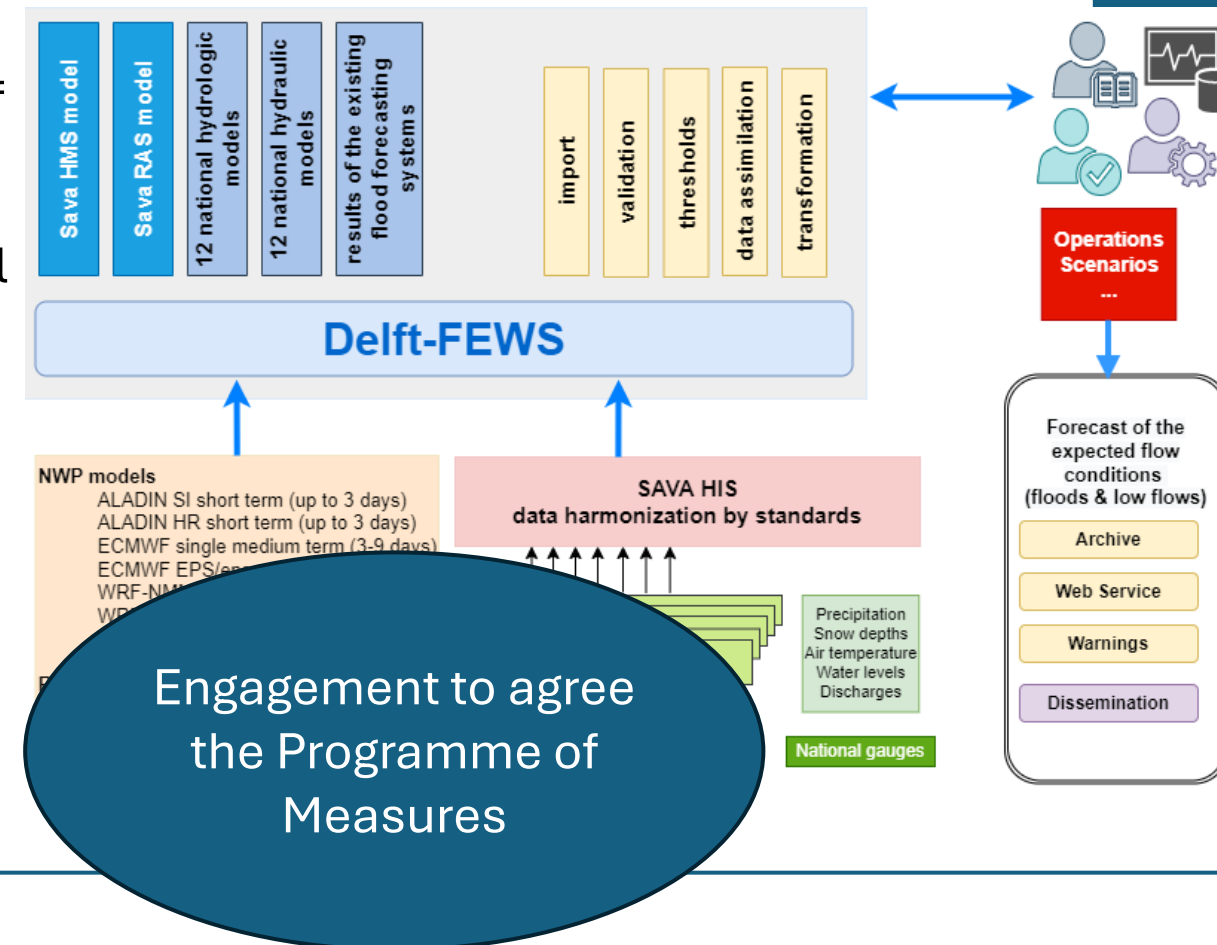
Engagement
required during the
1st stakeholder
meeting and surveys



Structure of the updated Sava FRMP

- **Flood alleviation measures for achieving objectives:**

- Review and update 1st FRMP Programme of Measures (PoM).
- Develop the updated PoM including: structural measures in AMIs; non-structural measures of basin-wide importance; Assess transboundary impacts; Prioritization of measures and implementation.
- Cost estimates and sources of funding.
- Development a Monitoring and Evaluation (M&E) framework to track the progress of the implementation of the PoM over a six-year period.



Structure of the updated Sava FRMP

- **Transboundary cooperation in flood emergency management:** Overview of current situation related to procedures and mutual assistance; Proposals for improvement.
- **Stakeholder engagement.**
- **Key findings.**



Engagement to
review the extent to
which SFFWS
reduces flood risk



FRMP - Cost estimates of Measures for Achieving Objectives

Objective: *Developing robust, transparent and comparable cost estimates for all measures in the Programme of Measures of the FRMP to support their prioritisation and implementation.*

Structural measures

Non-structural measures

Costing methodology

- Literature review: EU, World Bank, previous Sava FRMPs
- Internal benchmarks: experience from similar regional projects
- National consultations: validation of assumptions and costs
- Technical expertise: for infrastructure and engineering estimates
- Validation with national agencies prior to publication



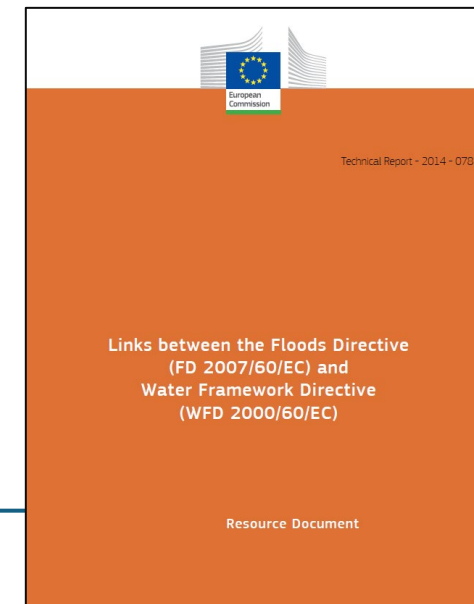
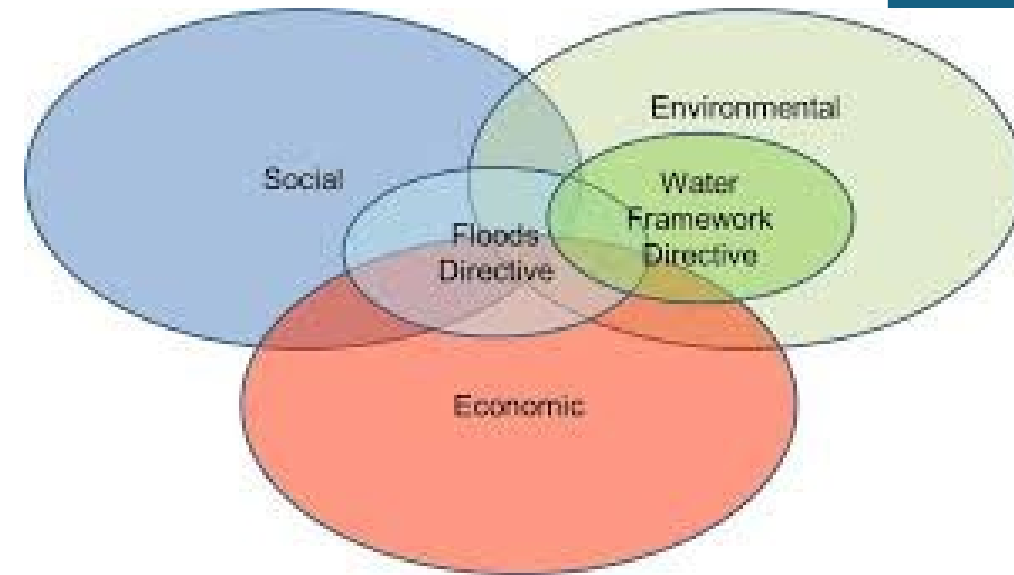
Some initial thoughts on the 1st cycle Sava FRMP and how to build on it

- **Integration of climate change projections:** Updated FRMP should use downscaled climate projections, test the robustness of proposed measures under future scenarios, and integrate climate adaptation into PoMs.
- **Prioritisation and cost–benefit analysis of measures:** Requirement for transparent ranking of measures based on risk reduction, costs, benefits, and environmental impacts; Stronger links to investment planning and financing mechanisms.



Some initial thoughts on the 1st cycle Sava FRMP and how to build on it

- **Links to nature-based solutions:** Consider nature-based solutions in PoMs and improve link to River Basin Management Plan (RBMP) and biodiversity policies.
- **Transboundary operational coordination:** Strengthen operational links between the FRMP and the Sava Flood Forecasting and Warning System (FFWS); Clarify cross-border emergency procedures, and data exchange, and governance arrangements.



Some initial thoughts on the 1st cycle Sava FRMP and how to build on it

- **Monitoring, indicators, and evaluation:** Inclusion of Specific, Measurable, Achievable, Relevant, and Time-bound (SMART) indicators; Regular reporting mechanisms at basin level; Clear links between monitoring results and plan revision.



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- Integrated management of the Sava River Basin -

“Sediment management”

Dr. Christoph Hauer



General Objectives (1):

A **3rd River Basin Management Plan** needs to be developed by the **end of 2027**. This plan aims to achieve "good status" for water bodies by **setting new management and improvement targets for 2028–2033**. **Public consultation** is a key part of this process, with stakeholders providing input on the timetable, work program, significant water management issues, and draft plans.

The entire process requires **active public involvement**. Public participation is a core principle of sustainable water management as required by the EU WFD (Article 14), the FD (Article 10), and the Framework Agreement on the Sava River Basin (Article 21). A **coordinated stakeholder engagement strategy**, applied consistently across the three planning processes, will ensure **active engagement of authorities, experts, users, communities, and stakeholders** at different stages of the planning process.



General Objectives (2):

In the area of **sediment management**, a significant, long-term initiative **was launched in 2012**: "Towards Practical Guidance for Sustainable Sediment Management using the Sava River Basin as a Showcase."

This project was a collaborative effort, spearheaded by the UNESCO Venice Office, and involving key partners such as the **UNESCO International Sediment Initiative (ISI)**, the **European Sediment Network (SedNet)**, and the **ISRBC**.

The primary goal of this initiative was to **develop** and **validate practical guidelines** for **achieving sustainable sediment management** across an entire **river-basin scale**, using the Sava River Basin as a real-world demonstration area.

Now, the first Sava SMP with accompanying PoM should be developed.



Inception activities:

Development of a methodology for the **preparation** and **implementation of stakeholder engagement** and the **public consultation process** in accordance with Article 14 of the WFD, Article 9 and 10 of the FD, and in line with the ISRBC's procedures. Development of an approach for stakeholder engagement and public consultation process for the **Sediment management plan**.

Definitions for the onboarding of stakeholders:

„Sediment management plans for river basins are ***strategic integrated documents*** aimed at balancing ***sediment quantity*** and ***quality*** to support ***flood risk management, navigation*** and ***ecological integrity***.“

„Sediment management plans should balance ***analysis, monitoring strategies*** and ***measures*** to management ***sediment related risks***, often focusing on connection ***local action*** with ***catchment scale goals***.“

„***Sediments*** and ***sediment dynamics*** are the ***backbone*** of the ***river morphology*** and related ***functional habitats***.“



Evaluation of Sediment Quantity and Quality:

Aim:

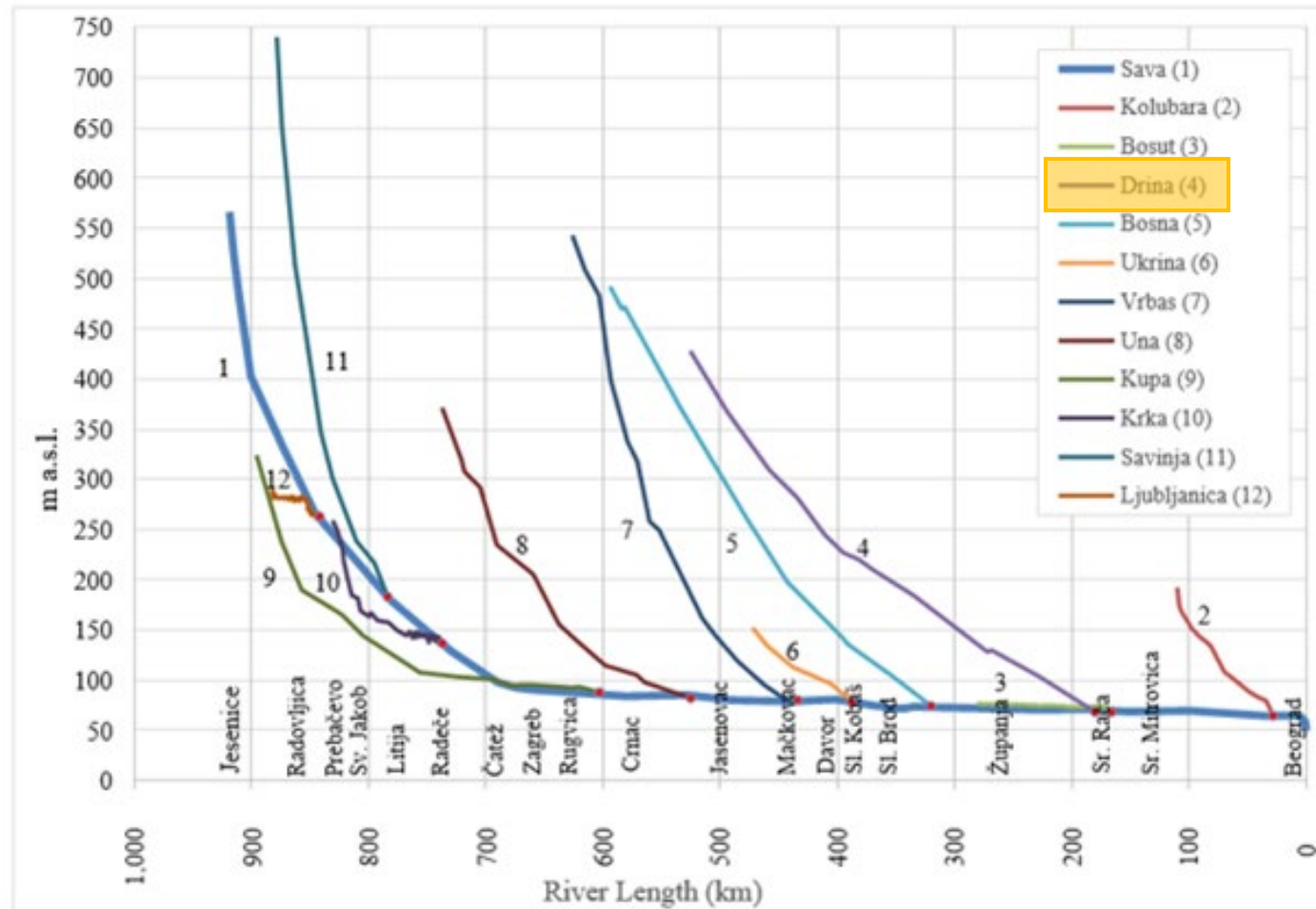
To provide a detailed overview of the **(i) current status of river morphology, (ii) sediment supply, (iii) areas of erosion and deposition and sediment transport** in the Sava river basin with a focus on the **(iv) natural- and anthropogenic disturbed processes** as an important boundary for the targeted management plan.

Approach taken:

- historical **river morphological changes**, including sediment sources of coarse and fine sediments, pathways, storage zones and sinks.
- **sediment transport and deposition patterns** of bed load and suspended load leading to an assessment of erosion (including Bank and Infrastructure Assessments).
- **anthropogenic influences** on sediment quantity and quality (potential pollution of fine sediments), including impacts of hydropower plants, channelization and dredging.
- **anthropogenic or natural influences** on sediment quality and the related affected areas (e.g. diffuse sources).
- **sediment contamination risks** and identifying sediment quality hot spots (point sources for pollution).



Proposed Methodology (in addition to existing HEC-RAS models) :

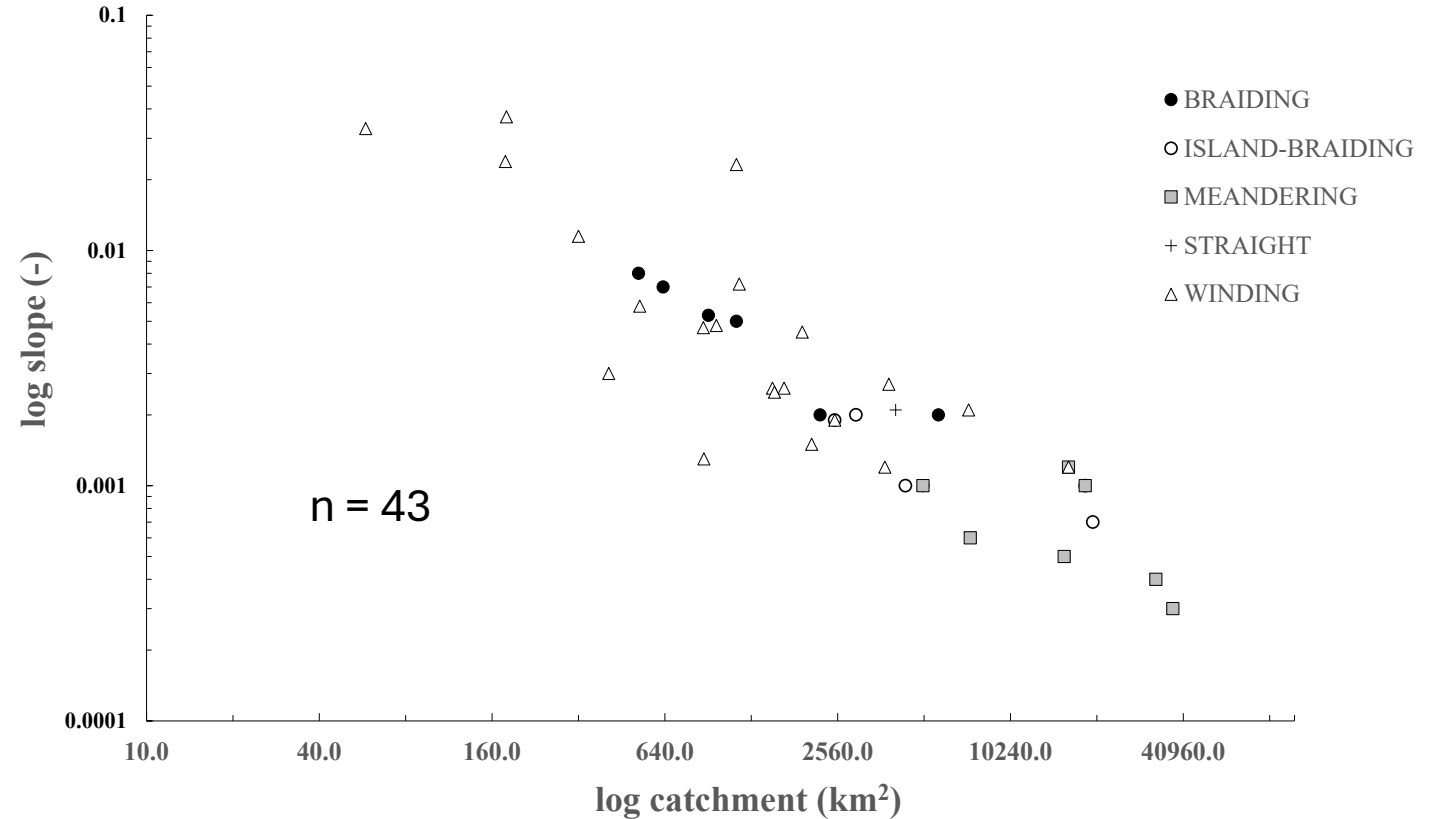
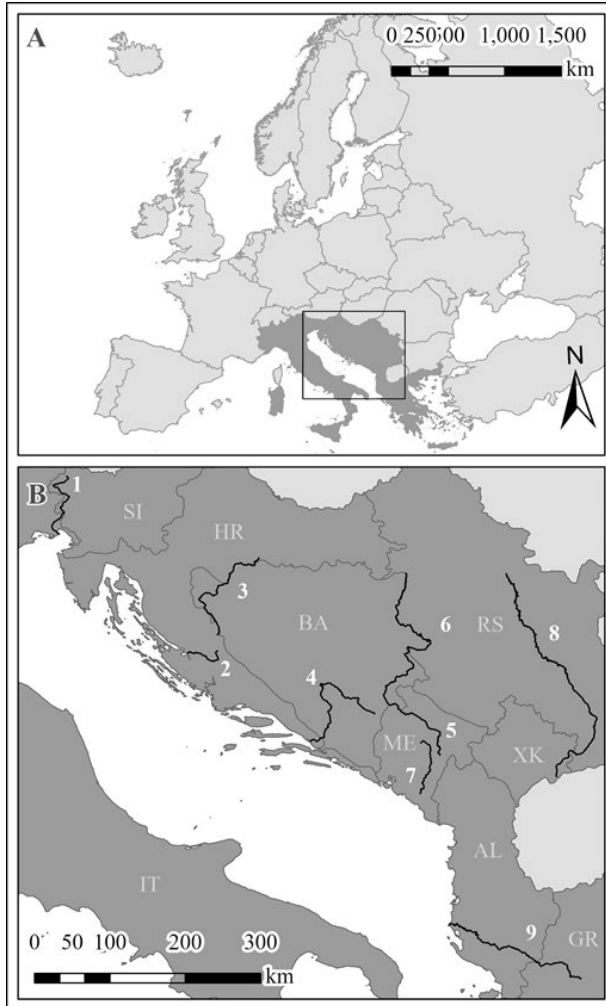


Drina river was part of a study on Balkan rivers (Hauer *et al.*, 2026)

Schematic longitudinal profiles of the Sava River and its main tributaries (Source: Sava Commission)



Proposed Methodology (Hauer *et al.*, 2026):

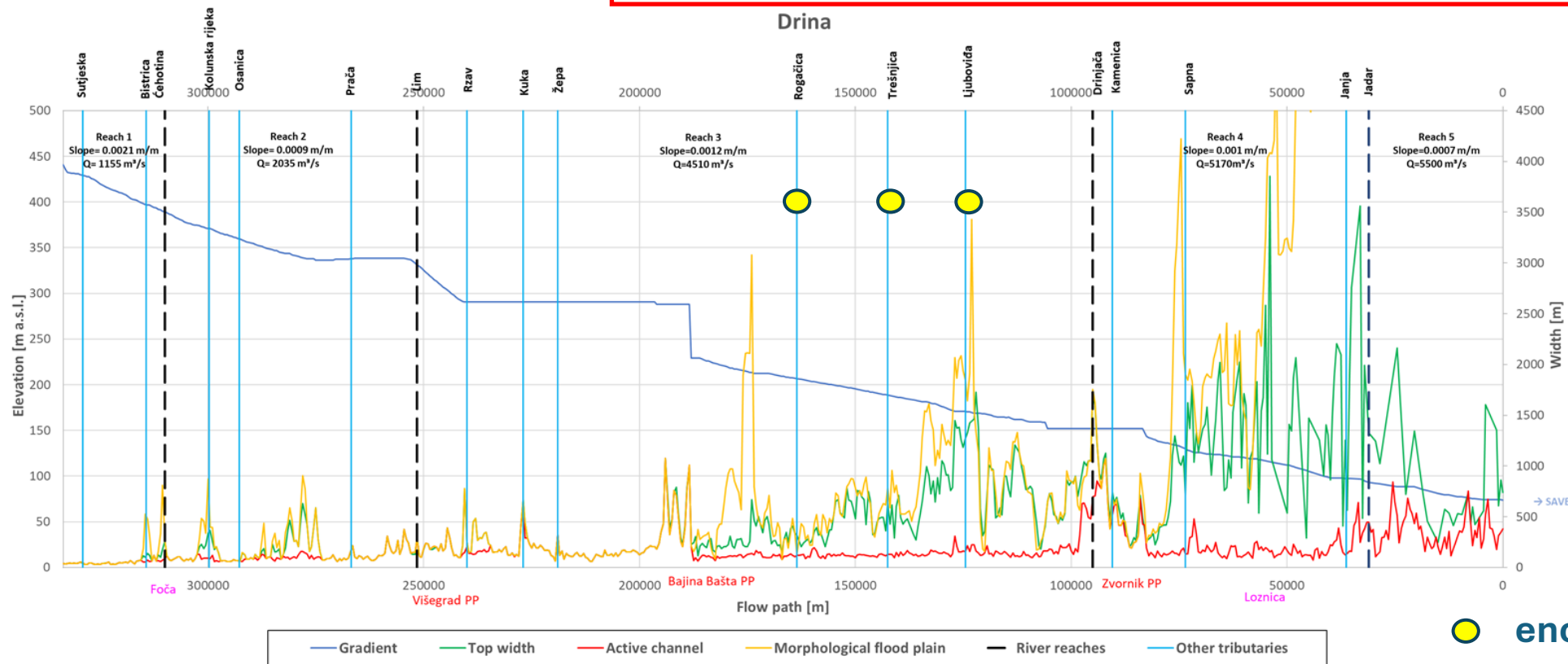
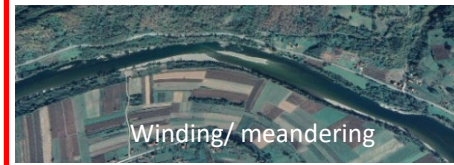


(EU-DEM v1.1) with a **cell size of 25 m x 25 m** was used for this GIS-analysis. The EU-DEM v1.1 provides pan-European elevation information at a resolution of 1 arc-second and is a hybrid product consisting mainly of the Shuttle Radar Topography Mission (SRTM) and the Spaceborn Thermal Emission and Reflection Radiometer (ASTER) Global Digital Elevation Model (GDEM) (Eurostat, 2014). A **vertical accuracy of 2.9 m** was given for the EU-DEM developed in the course of the Copernicus program.



Example: Drina river

How sensitive?

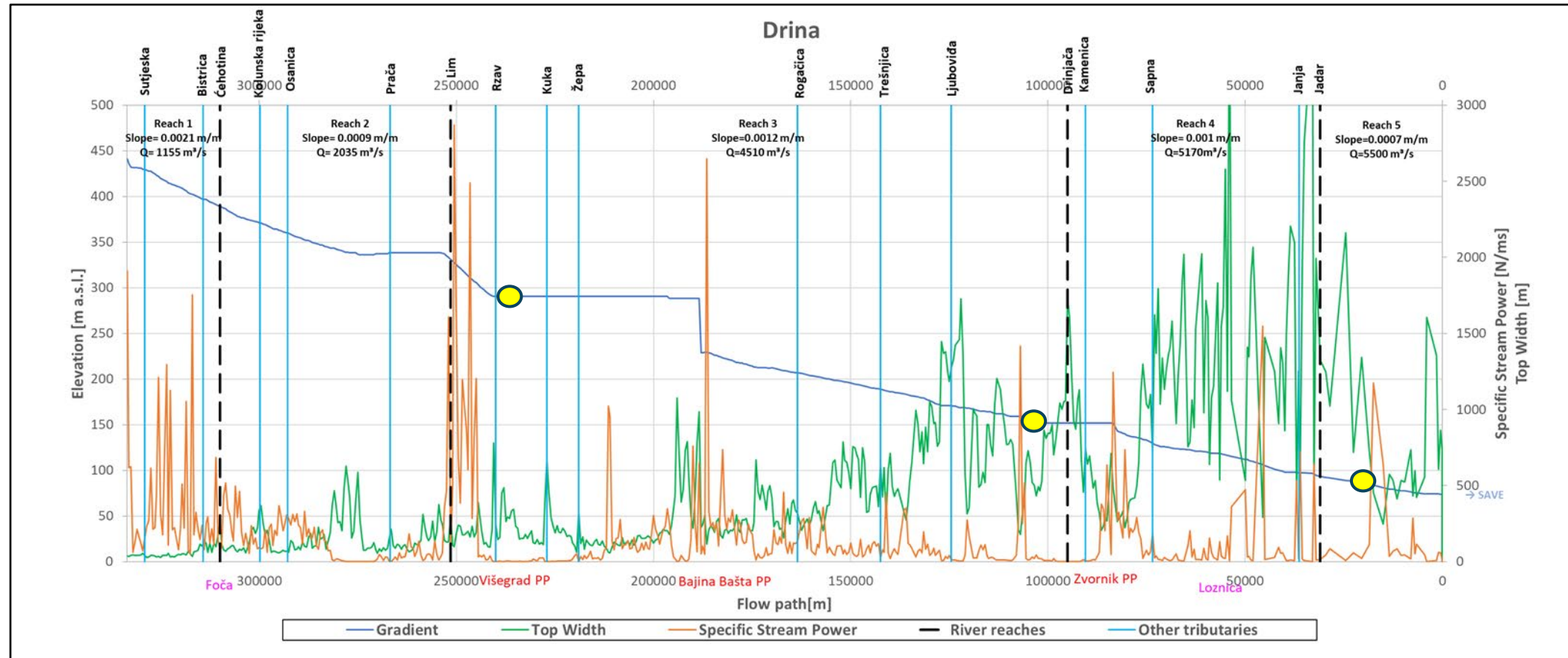


● enough bed load supply?



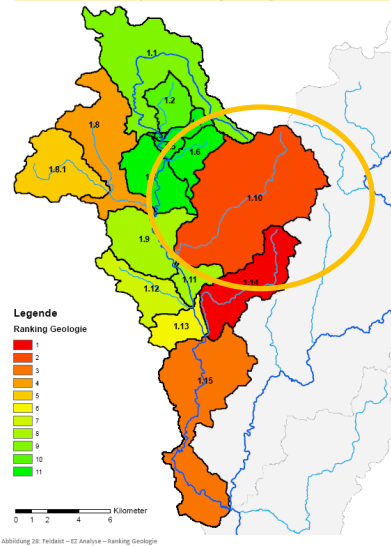
Example: Drina river

● Dredging activities?

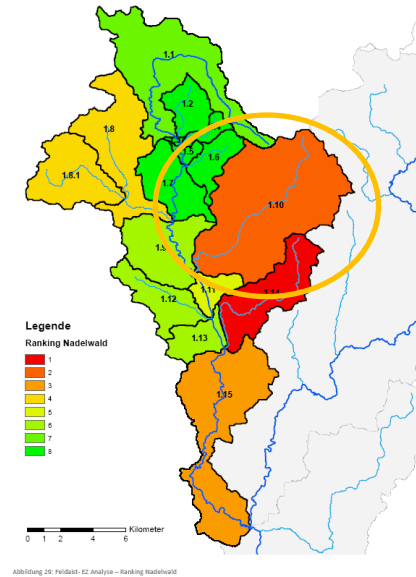


Sediment management Aist river / Upper Austria

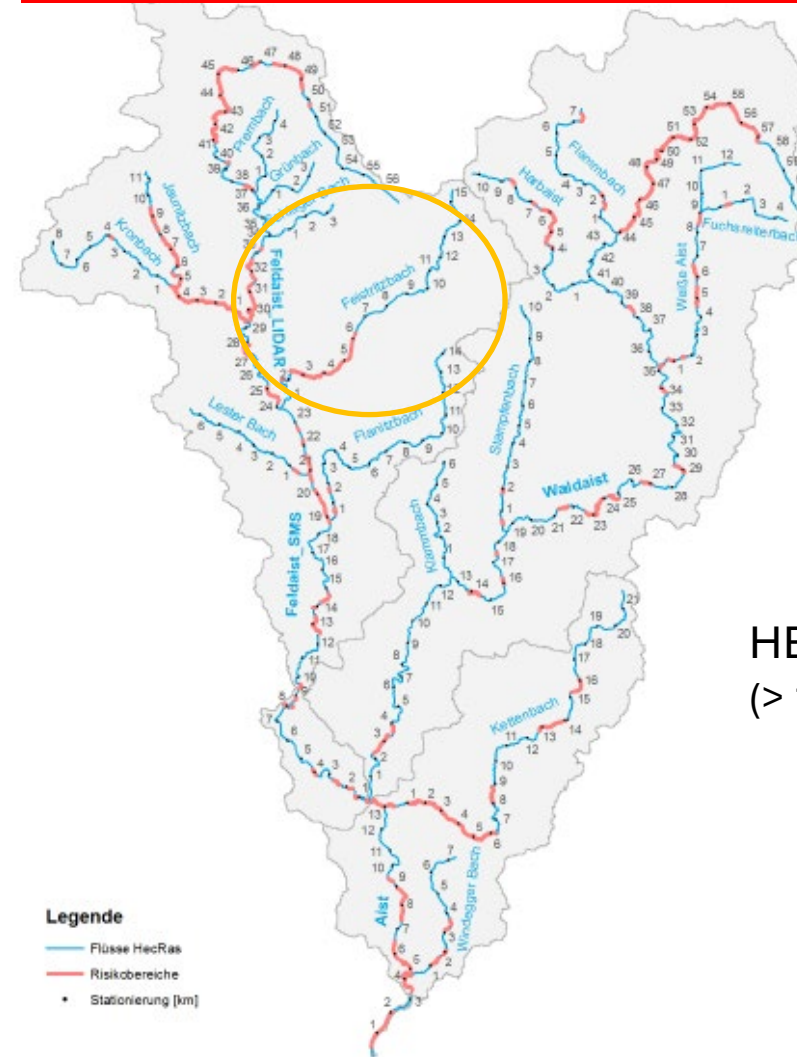
Geology



Land use

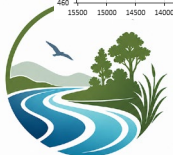
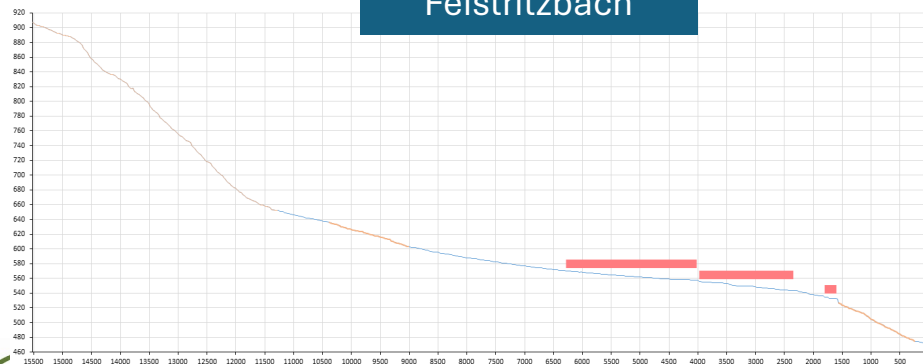


Aim: Analysis of fine sediment erosion and risk of accumulation / clogging



HEC-RAS Model
(> 11.000 Cross sections)

Feistritzbach

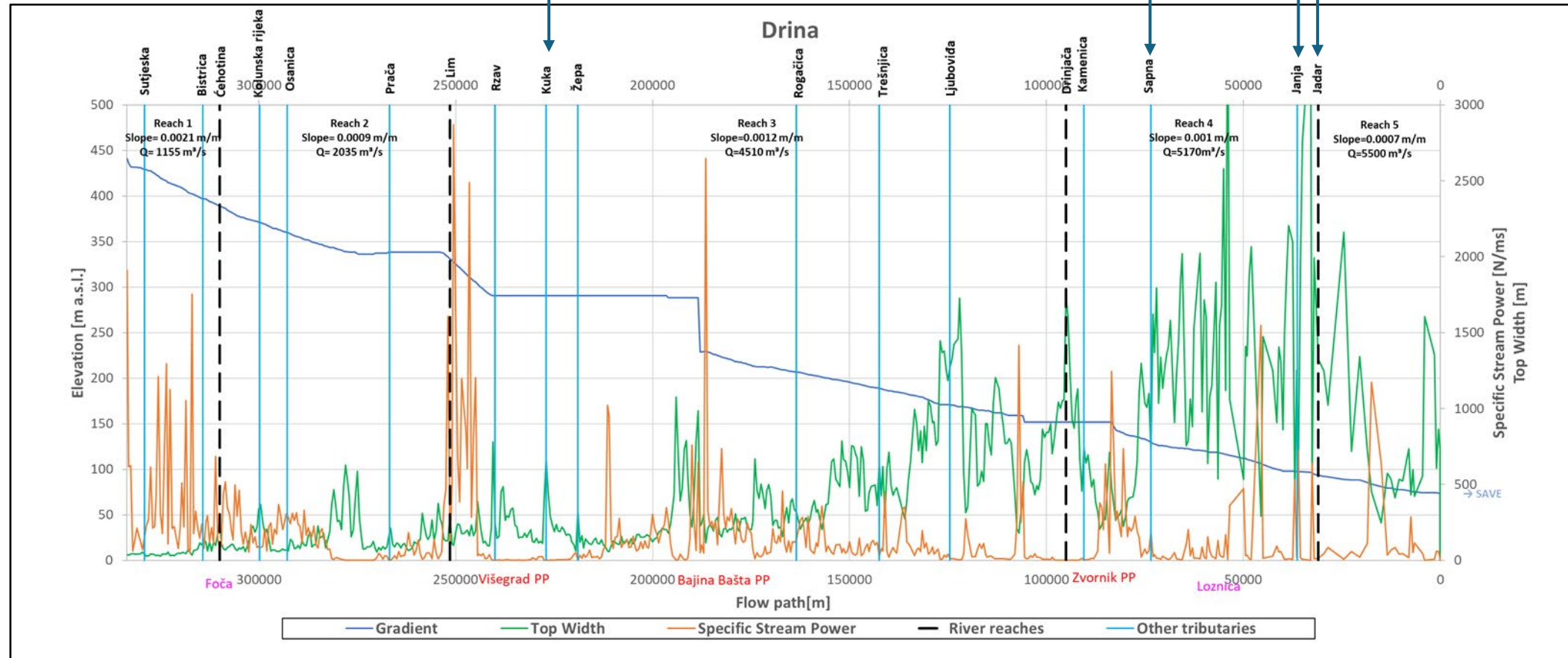


Proposed method:

Based on the work of Study on “Sediment, Water and Biota of the SAVA basin”

Risk assessment of fine sediment surplus:

- high █
- moderate █
- low █



Example: Sediment management hydropower

economic importance

➔ At the moment **costs** for **depositing** of dredged material in Austria **10 – 20 €** per m³.

dredging



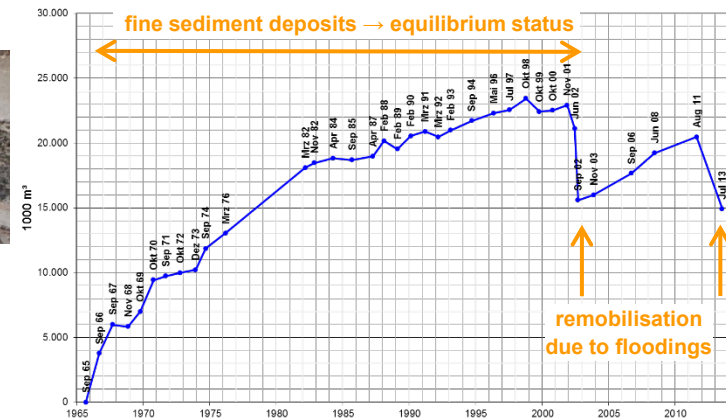
Flood impacts



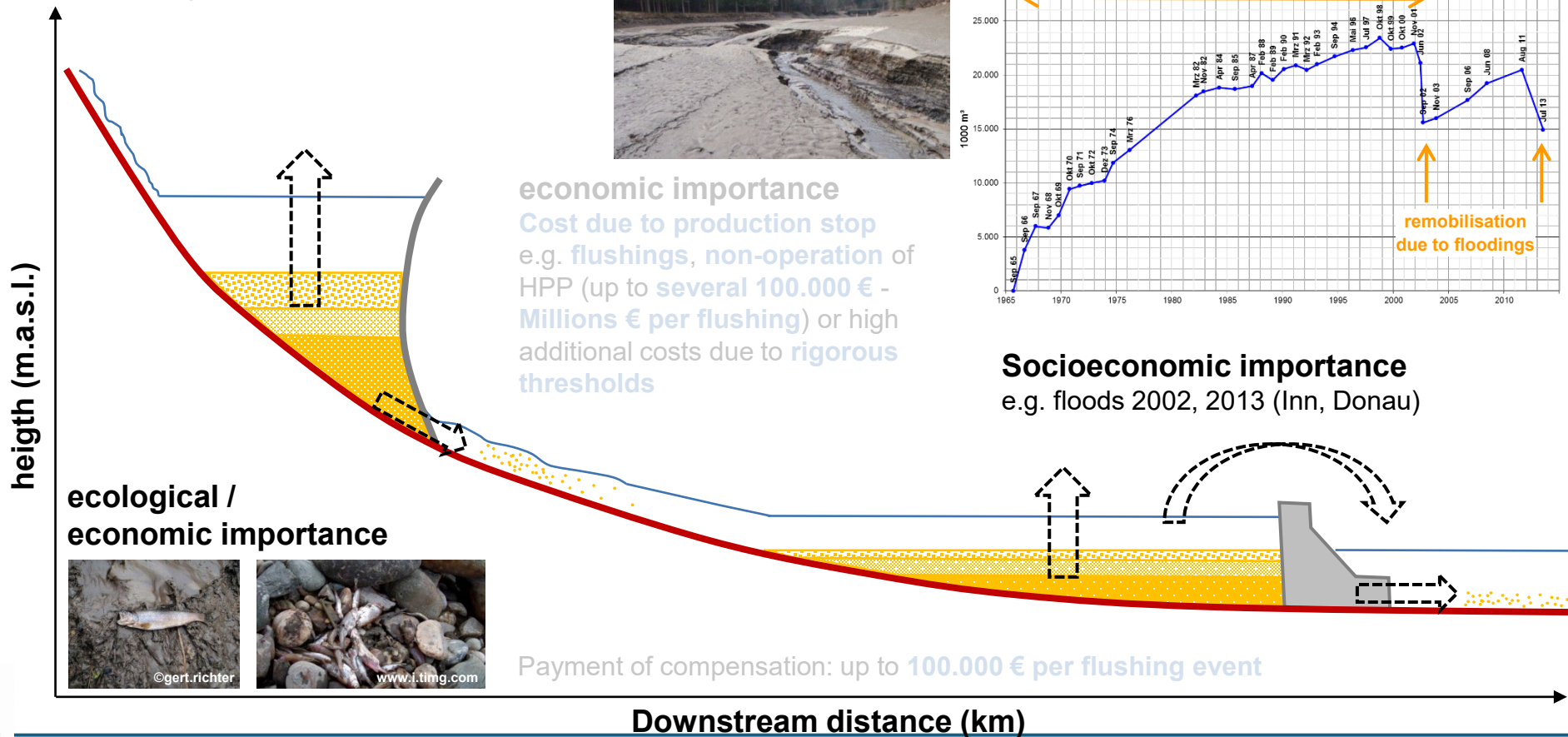
flushing



economic importance
Cost due to production stop e.g. **flushings**, non-operation of HPP (up to **several 100.000 € - Millions € per flushing**) or high additional costs due to **rigorous thresholds**



Socioeconomic importance
e.g. floods 2002, 2013 (Inn, Donau)



General Objectives (3):

The **revision of the RMMP** will address **significant water management issues**, including organic and nutrient pollution, hazardous substances, **hydromorphological alterations**, and pressures on groundwater quality and quantity, as well as emerging challenges such as **sediment management** and climate change impacts.

The update will also **ensure alignment with parallel planning instruments**, including the Flood Risk Management Plan (FRMP) and the Sediment Management Plan (SMP), **fostering synergies** and **integrated solutions** for sustainable water management.

Sediment Management: The Program for the Development of Sediment Management Plan in the Sava River Basin (2020) and the Outline of the Sediment Management Plan (2021) have laid the groundwork for the **first basin-wide Sediment Management Plan** addressing both **quantity** and **quality issues** and supporting sustainable sediment practices.



Summary

- The **proposed methodology** is **support the aims of the study** and is **complementary** to the **previous and ongoing projects** around sediment management in the Sava river basin.
- The methodology **links GIS-analysis** of erosion to the transport and deposition of coarse (bedload) and fine sediments (suspended load) based on **hydraulic modeling**.
- The hydraulic modelling approach is **suitable** to **identify areas at risks** where **local measures** are need to **support the catchment scale goals**.
- A **semi-quantitative analysis** should/will be established to clearly identify the **cause-impact relationships** on the **river morphology** and **habitat quality** in the **Sava river** and **main tributaries** to establish **the first Sava SMP with accompanying PoM**.



Your input is needed!

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Integrating plans and data

Thomas Dworak, Fresh Thoughts Consulting



Aim of the Integrated Approach

- **Comprehensive Analysis:** The primary goal is to outline and analyze the interlinkages and synergies between the River Basin Management Plan (RBMP), Flood Risk Management Plan (FRMP), and Sediment Management Plan (SMP).
- **Strategic Alignment:** Identifying overlaps in content and timing, as well as gaps and opportunities for integration.
- **Policy Links:** Connecting these plans to the Climate Change Strategy and the EU Nature Restoration Regulation.
- **Coordination:** Ensuring implementation occurs smoothly across sectors at both national and transboundary levels



Why Integrate? The Core Connections

- **Common Drivers:** All three plans (WFD, FD, and SMP) address water body status through measures impacting hydromorphology, river continuity, flow velocity, and sediment transport.
- **Environmental Health:** Sediment quality and transport are decisive for assessing ecological and chemical status of surface water bodies.
- **"Win-Win" Solutions:** Integrated planning avoids conflicting measures and creates solutions that benefit both flood risk reduction and environmental protection.



Assessing Conflicts and Synergies

- **Basis for Assessment:** Using European Commission technical reports and ICPDR discussion papers as a foundation.
- **Key Questions to Address:**
 - Do specific flood protection measures require Article 4.7 WFD assessments?
 - Are there opportunities for synergy effects?
 - Can measures be spatially co-located for common implementation?
 - Can timelines be synchronized for better efficiency?



The Joint Plan of Measures (JPM)

- **Efficient Execution:** Activities must be coordinated in time and space to achieve objectives without harmful environmental side effects.
- **Strategic Milestone:** The JPM serves as a milestone for allocating financial resources and effort across the three plans.
- **Team Collaboration:** Ongoing interaction between the teams developing each plan is crucial for objective planning and rapid updates based on basin-wide risk assessments



Report on Monitoring and Evaluation Methodology (measures)

- **Objective:** Proposing a methodology to track progress and facilitate plan adjustments over time.
- Two Types of Monitoring:
 - Output Monitoring: Tracking the actual progress and completion of planned actions (Physical progress).
 - Outcome Monitoring: Assessing how effective those measures are in reaching environmental and safety targets.
- Legal Compliance: Aligned with Article 15 (WFD) and Article 8 (FD) legal reporting requirements





Stakeholder engagement plan

*Nuria Hernández-Mora,
Fresh Thoughts Consulting*

Stakeholder engagement: Fora

- **Objective:** support the development of the RBMP, FRMP, and SMP by providing ample opportunity for transparent, inclusive, and cooperative basin-wide planning
- **Stakeholder engagement activities**
 - **Stakeholder mapping and characterization**
 - **Stakeholder Forum 1 – September 2026 (Date TBD)**
 - Validate intermediate outputs (e.g. SWMI, Flood risk areas and maps, SM goals, etc.)
 - Refine objectives and target levels
 - Co-develop packages of measures
 - Ensure policy coherence between WFD, FD, and SMP
 - **Stakeholder Forum 2 – February/March 2027 (Date TBD)**
 - Gather feedback on the draft plans and accompanying measures



Stakeholder engagement: surveys

- **Ad-hoc online surveys**

- Objective:
 - Information and feedback from a wider range of stakeholders
 - In-depth input on specific technical or policy topics from targeted stakeholder subgroup of stakeholders
- 2 planned surveys (additional ones on a per-need basis)
 - Survey 1: baseline issues, objectives, and lessons learned from previous planning cycles (potential date: June 2026)
 - Survey 2: validation of SWMIs, preliminary priorities, and potential measures (potential date: September 2026)
 - Proposal to consolidate with the first phase of the public consultation



Public consultation

- **Objective:** gather feedback and comply with legal requirements and good practice for transboundary river basin planning
- **Phase 1:** Consultation on Significant Water Management Issues and Flood Risk and Hazard Maps (in parallel with first Stakeholder Forum)
 - September-October 2026
- **Phase 2:** Formal consultation on Draft RBMP, FRMP, SMP and Associated (and coordinated) Programs of Measures
 - May-August 2027



Interactive web-based tool

- **Core Purpose:** An interactive tool designed for users to access, analyze, and visualize information from the RBMP, FRMP, and SMP through interactive maps and data visualization.
- **Measure Selection:** Allows users to actively select actions and measures relevant to each of the management plans.
- **Stakeholder-Driven Design:** Based on a needs assessment to understand how different parties will use the tool, such as for policy decisions, raising awareness, or identifying collaboration opportunities.
- **Tailored Detail:** Will provide varying levels of information, from high-level summaries for the general public to raw data and in-depth reports for researchers.



Interactive web-based tool

- **Functionality & Interactivity:** Key features include multilingual capabilities, web accessibility, and the ability to filter data by sector, region, or impact.
- **Technical Foundation:** The tool is recommended to be built upon the existing ArcGIS Portal and must support both public and registered-user areas.
- **User Testing & Quality Assurance:** Volunteer stakeholders will participate in beta testing and training sessions, providing feedback via questionnaires to refine usability and clarity before finalization.



Capacity building and communication plan

Shashwati Sankar,
TRINOMICS



Communication strategy

- **Aim:** Enhance transparency, awareness and stakeholder participation throughout the development of the RBMP, FRMP, SMP.
- **Objectives:**
 - Inform key stakeholders by making draft plans understandable, accessible, easy to disseminate. Also inform the wider public about project goals, progress, milestones and key results
 - Support stakeholder engagement by translating complex technical topics into clear accessible summaries
 - Increase visibility of the Sava River Basin Management Plans planning process and strengthen the role of the ISRBC as the central basin-wide coordinating institution
 - Facilitate effective public consultations
- **Expected outcome:** Management plans that are technically robust, well understood, socially grounded and politically supported across the Sava River Basin.



Capacity building activities

Aim of capacity building

- Strengthen technical and collaborative capacities for coordinated RBMP, FRMP, and SMP implementation across the Sava River Basin
- Foster sustained institutional learning and cooperation among competent authorities from riparian countries and ISRBC Expert Groups (PEGs)

Overall approach

- Capacity building delivered through a structured Knowledge Transfer Programme
- KTP will be an overarching framework to harmonise methodologies, share expertise and EU/international best practices, strengthen cooperation within PEGs
- Training events aligned with RBMP, SMP, FRMP to enable immediate application of knowledge



Capacity building activities

Delivery of capacity building

- Sequence of targeted training events combining theory, practice and discussion
- Central online repository (e.g. ISRBC sharepoint) hosting:
 - ❑ Training materials, datasets, guidance documents, presentations;
 - ❑ Methodological templates and best-practice references.
- Final scope, timing and experts that will be part of the training events will be developed further and confirmed with the ISRBC.
- Trainings will be delivered in a highly interactive format focused on sharing expert technical inputs, highlighting lessons learned and best practices in the Sava River Basin and other EU and international river basins.

Direct benefits of the trainings

- Immediate integration into ongoing RBMP, FRMP, SMP work
- Clear follow-up actions for PEGS and national authorities
- Improved methodological coherence, transparency and consistency in work plans across the Sava River Basin



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Coffee break



Listening to the basin: Expectations, priorities

Slido results



River Basin Management Plan (RBMP)



Which issue(s) most urgently require basin-wide harmonization in the 3rd River Basin Management Plan (RBMP) cycle?

Multiple Choice Poll 19 votes 19 participants

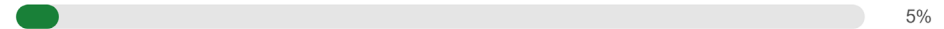
Characterization issues – Typology and Reference Conditions - 6 votes



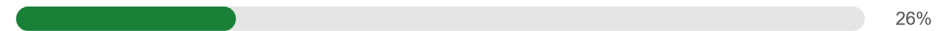
Surface water body delineation - 6 votes



Groundwater body delineation - 1 vote



Pressures' assessment - 5 votes



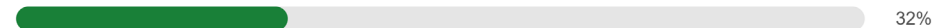
Priority substances / pollution inventories - 4 votes



Monitoring methodologies - 10 votes



Ecological status assessment - 6 votes



Economic analysis - 3 votes



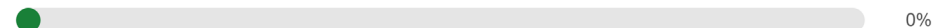
Joint prioritization of measures - 4 votes



Data exchange - 5 votes



Other - 0 votes

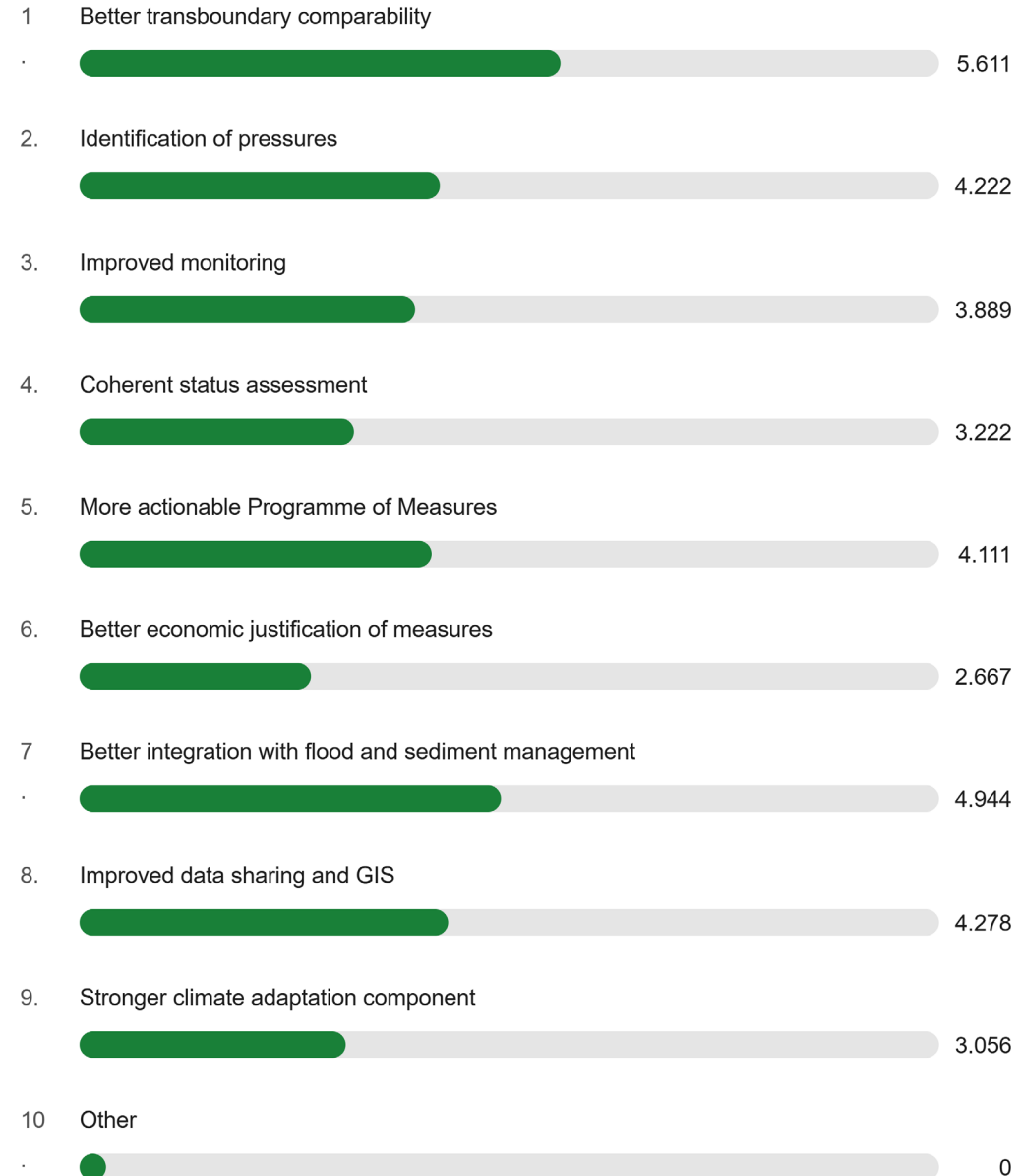


River Basin Management Plan (RBMP)



Compared to the 2nd Sava RBMP, where should the 3rd RBMP deliver the greatest added value? (Please rank)

Ranking Poll  18 votes  18 participants



River Basin Management Plan (RBMP)



If other, please explain:

Open text poll

✓ 1 response

👤 1 participant



Anonymous

Lack of understanding what the plans are



What is currently the biggest obstacle to coherent transboundary RBMP planning in the SAVA basin?

Multiple Choice Poll

✓ 19 votes

👤 19 participants

Different national methodologies - 14 votes



74%

Lack of methodologies - 4 votes



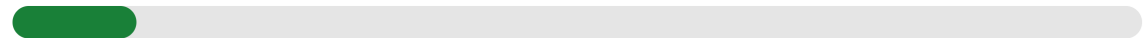
21%

Uneven data quality - 7 votes



37%

Institutional fragmentation - 2 votes



11%

Lack of comparable monitoring - 10 votes



53%

Timing mismatch of national planning cycles - 8 votes



42%

Other - 1 vote



5%

Flood risk management plan (FRMP)



If other, please explain:

Open text poll 1 response 1 participant



Anonymous
Improved information on future floods.



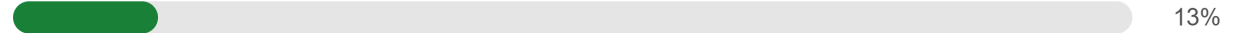
Where can the updated Sava Flood Risk Management Plan (FRMP) provide the greatest transboundary added value?

Multiple Choice Poll 15 votes 15 participants

Better coordination in AMIs - 3 votes



Improved information on historical floods - 2 votes



Harmonized flood risk assessment - 9 votes



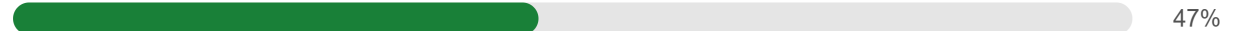
Better integration with RBMP/Sediment Management Plan (SMP) - 9 votes



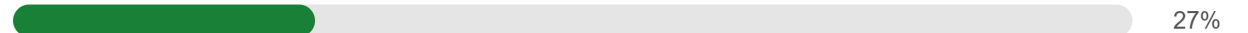
Joint prioritization of measures - 7 votes



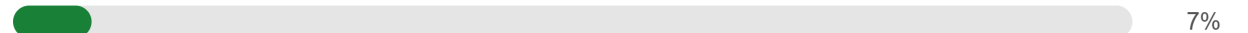
Improved integration of climate change into the Programme of Measures - 7 votes



Improvements in cooperation with regards to flood forecasting and early warning - 4 votes



Other - 1 vote



Flood risk management plan (FRMP)



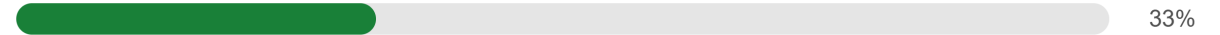
Which components of the next Sava Flood Risk Management Plan (FRMP) cycle most need improvement from a transboundary perspective?

Multiple Choice Poll

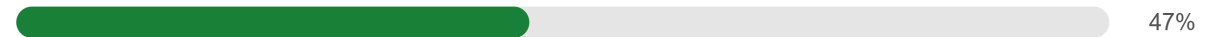
✓ 15 votes

👤 15 participants

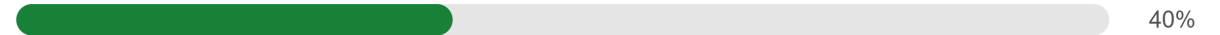
Coordination in Areas of Mutual Interest (AMIs) - 5 votes



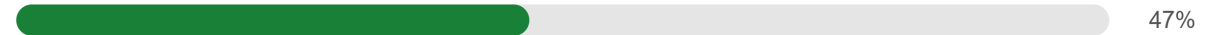
Prioritization of basin-wide measures - 7 votes



Integration with River Basin Management Plan (RBMP) and Sediment Management Plan (SMP) objectives - 6 votes



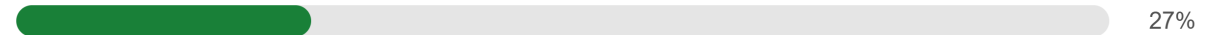
Integration of climate change into the Programme of Measures - 7 votes



Monitoring and evaluation of measures - 4 votes



Data and model sharing between countries - 4 votes



Coordination of non-structural measures - 6 votes



Flood risk management plan (FRMP)



Compared to the 1st Sava Flood Risk Managment Plan (FRMP), what should the 2nd FRMP do substantially better?

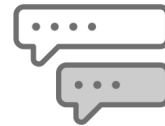
Open text poll



0 responses



0 participants



This poll has no responses.



Sediment management plan (SMP)



Which sediment -related process should be the highest priority in the first Sediment management plan (SMP)?

Multiple Choice Poll

✓ 15 votes

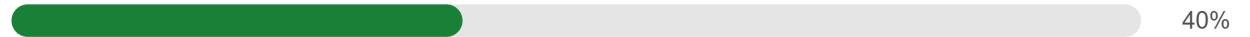
👤 15 participants

Erosion and sediment input from catchments - 5 votes



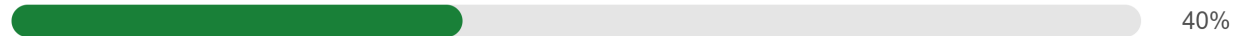
33%

Sediment transport and deposition processes - 6 votes



40%

Reservoir sedimentation and flushing - 6 votes



40%

Dredging impacts and sediment extraction - 7 votes



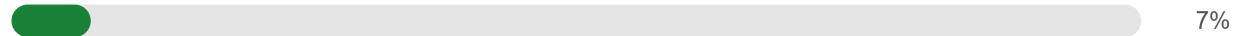
47%

River morphology and habitat degradation - 7 votes



47%

Fine sediment accumulation and clogging - 1 vote



7%

Sediment monitoring and modelling - 10 votes



67%

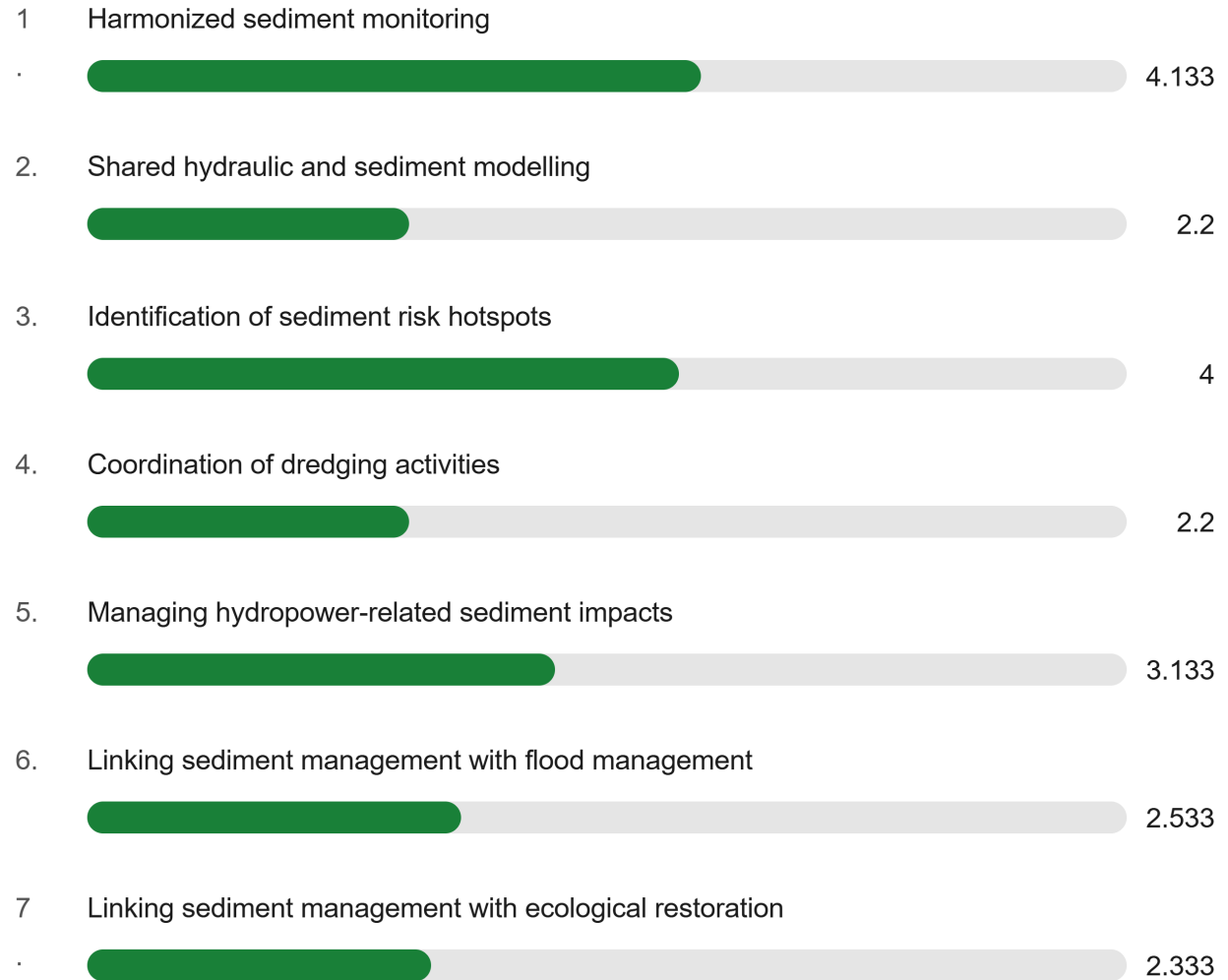


Sediment management plan (SMP)



Where could basin-wide cooperation add the greatest added value for sediment management? (Please rank)

Ranking Poll ☒ 15 votes  15 participants



Sediment management plan (SMP)



What should the first Sava Sediment Management Plan deliver that existing studies and projects have not yet achieved?

Open text poll



0 responses



0 participants



This poll has no responses.



Cross-cutting issues



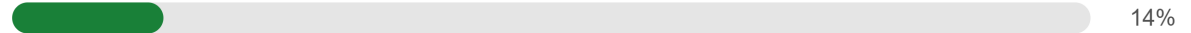
Where is there the greatest opportunity for joint action across the River Basin Management Plan (RBMP), Flood risk management plan (FRMP) and Sediment management plan (SMP)?

Multiple Choice Poll

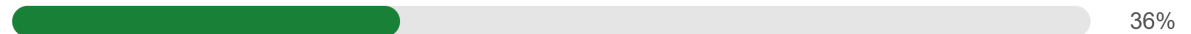
✓ 14 votes

👤 14 participants

Hydromorphological restoration / protection of habitats - 2 votes



Floodplain reconnection and nature-based solutions - 5 votes



Joint monitoring and data sharing - 6 votes



Climate change adaptation - 4 votes



RBMP, SMP and FRMP integration - 7 votes



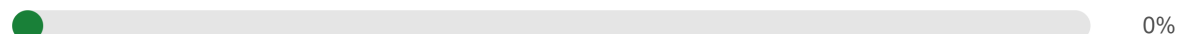
Coordination of Programmes of Measures - 10 votes



Shared GIS and modelling platforms - 3 votes



Other - 0 votes



Cross-cutting issues



If other, please explain:

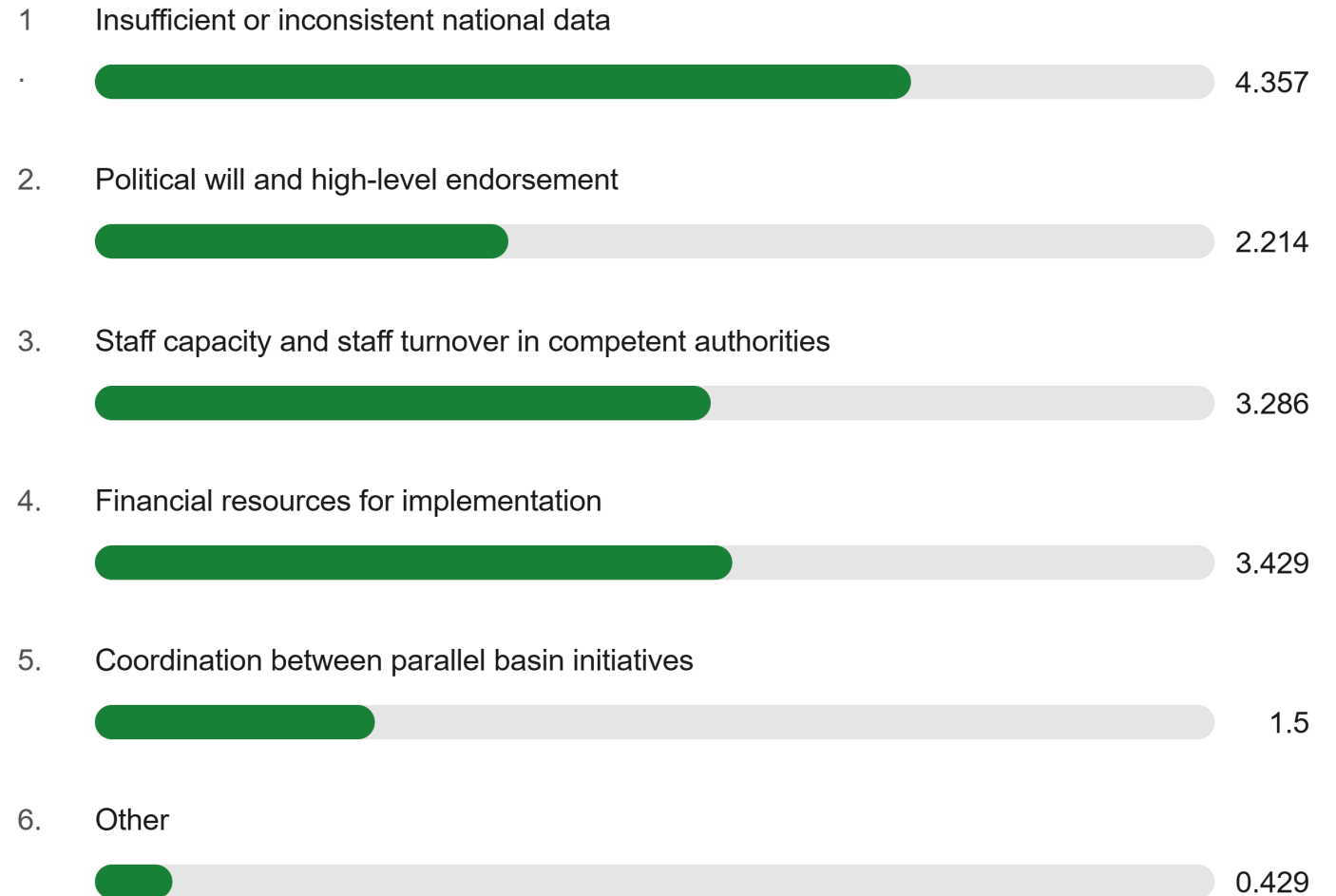
Open text poll 1 response 1 participant

Anonymous
Understanding that there is need for differing national approaches in some cases for a reason



Which of these risks poses the greatest threat to successful plan delivery? (Please rank)

Ranking Poll 14 votes 14 participants



Cross-cutting issues



What should this new integrated planning cycle achieve that previous basin plans could not?

Open text poll



2 responses



2 participants



Anonymous

TO MANY THINGS TO ADD IN THIS SHORT FORMAT



Nevenka Nikolić

intergated management

slido



Parallel initiatives in the basin: Updates and synergies



Sava and Drina River Corridors Integrated Development Program (SDIP)

Phase 1, Part 4 – Regional cooperation

Kick-off Meeting

on

Technical Assistance in the
Preparation of Management Plans for
the Sava River Basin

Parallel initiatives in the basin:
Potential synergies with ongoing SDIP projects

ISRBC Secretariat

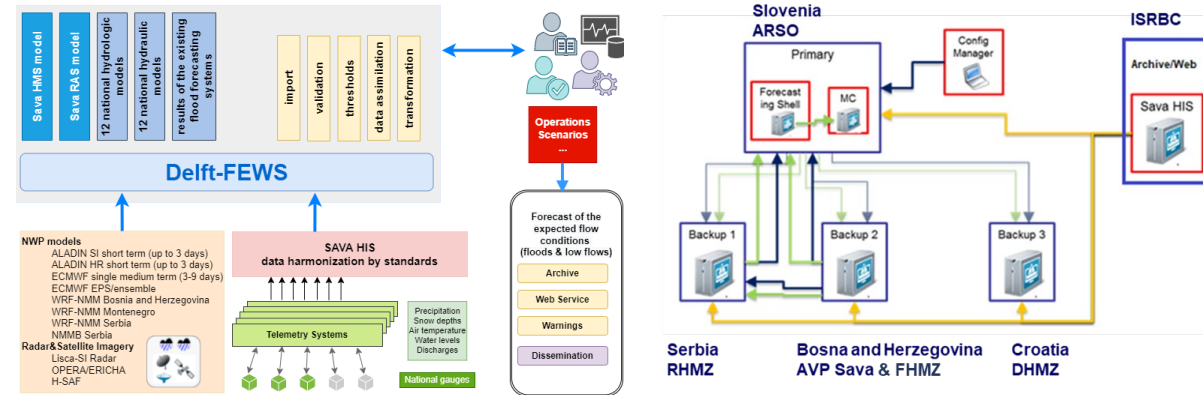
May 13, 2026



Technical Assistance for the improvement, extension and operationalization of flood and low-flow forecasting and warning system in the Sava River basin

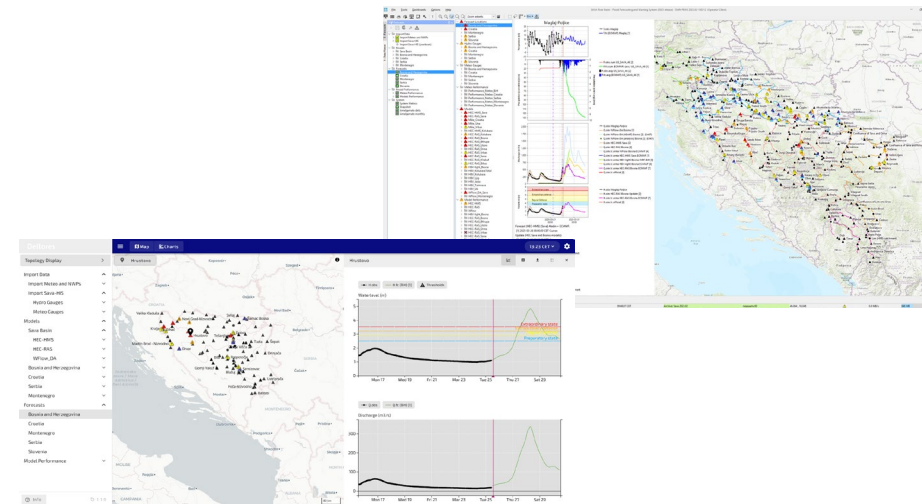
Main objectives:

- Improved forecasting of flood and low-flow events
- Improved and harmonized warning procedures
- Better informed decision-making on the management of hydroclimatic risks across water-related sectors



Specific objectives:

- Improved and upgraded modeling tools
- Improved and upgraded low-flow forecasting capabilities
- Further developed and enhanced flood and low-flow warning system
- Well-trained staff of the Sava FFWS user organizations
- Recommendations for future developments of the forecasting system



Technical Assistance for the improvement, extension and operationalization of flood and low-flow forecasting and warning system in the Sava River basin

Main Outputs:

- High-resolution NWP models, satellite, and radar composite image (nowcasting)
 - Improve short-term weather (rainfall and air temperature) forecasts
 - Implementation of NWP products and related sources for the medium/seasonal term (weeks, months) and the long-range term (year) to be able to forecast low-flow and dry periods
 - Enhancing the initial state by improving Quantitative Precipitation Estimate (QPE) and meteorological forecast by improving Quantitative Precipitation Forecast (QPF)
- **Hydrological and hydraulic modelling** extended and improved
 - Models capable of representing both flood and low-flow conditions, processes for the particular conditions prevailing in the basin (karstic phenomena and snow melting), reservoir operation for principal reservoirs in the basin, based upon predefined or ad hoc modified operation rules
 - Capabilities to enable accurate hydrological information for the inland navigation sector and hydrological drought analysis
 - Reliable simulation results for ungauged subbasins (calibration/re-calibration and verification)
 - Efficient running and display of ensemble forecasts, combining probabilistic forecasting with model performance information to better address uncertainty

Technical Assistance for the improvement, extension and operationalization of flood and low-flow forecasting and warning system in the Sava River basin

- Improve the existing Ensemble Kalman Filter (EnKF) approach to assimilate observations in the forecasted variable(s) and implement it in the simulation models
- AI/ML capabilities (neural network-based forecasting) using the observed data
- **The low-flow forecasting system implemented** into the existing Sava FFWS common platform
 - Low-flow indicators relevant to users, primarily in the navigation sector (e.g. Standardized Precipitation Index - SPI; Standardized Water-level Index - SWI, Streamflow Drought Index - SDI, Standardized Runoff Index - SRI, etc.).
 - Low-flow forecasting procedures, including the definition of river cross sections where low-flow forecast is needed, particularly for navigation purposes, the type of variable(s) to be forecasted (water level/water depths), and relevant forecasting lead time
 - Functionality of supporting hindcasting, reanalysis of events, and supporting external data users and developers to expand community research on low flows and hydrological drought analysis
- **Efficient flood and low-flow forecasting and warning procedures** and an internal web dissemination platform
 - Basin-wide forecast locations that trigger emergency management operations (forecast threshold levels, forecast lead time, and, in case of probabilistic forecasts, exceedance probability)
 - Forecasting products, service delivery frequencies, formats, mechanisms, reliability, and availability (according to national warning procedures) and through the implementation of the Common Alert Protocol (CAP) standard
 - Tool(s) for collecting forecasts and/or issuing warnings

Technical Assistance for the improvement, extension and operationalization of flood and low-flow forecasting and warning system in the Sava River basin

- Testing and operationalization of the use of common flood and low-flow forecasting and warning system
- Training, capacity building and communication activities
 - Kick-off meeting during the Inception Phase
 - 3 training sessions, each lasting up to 5 days
 - Intermediate workshop, after the completion of installation
 - A webinar, during the operational testing phase (for all users/customers)
 - Final conference
- **Inventory of needs and recommendations** on the use and future improvements of the system
 - A proposal for the development of the rapid impact assessment due to flooding to the risk receptors as defined in the EU Floods Directive (human health, environment, culture heritage and economy) as well as to the accessibility to key points of interest (e.g. hospitals)

Study on Sediment, Water and Biota in the Sava River Basin

Main objectives:

- Improve understanding of sediment issues
- Support implementation of the FASRB and Sediment Management Protocol
- Help achieve Water Framework Directive (WFD) goals
- Support other EU environmental laws (e.g. floods, habitats, soil)
- Contribute to key sectors like agriculture, energy, and transport.



Specific objectives:

- Improve monitoring methods and fill data gaps across the basin (sediment, water, biota)
- Assess links between water, sediment, and biota, including human impacts and climate change
- Promote data and knowledge sharing, including developing a simulation model
- Support development of an Integrated Sediment Management Plan
- Strengthen capacity of experts and stakeholders.

Study on Sediment, Water and Biota in the Sava River Basin

Main Outputs:

- Integrated sediment–water–biota system assessment
 - Understanding of sediment quantity, quality, transport, and interactions with water and biota
 - Identification of hotspots and key pressures across the basin
- Harmonized monitoring and data framework
 - Standardized, WFD-compliant monitoring methods and QA/QC procedures
 - Improved data collection, sharing, and management systems (including Sava GIS/HIS upgrades and EO use)
- Sediment modelling and decision-support tool
 - Operational basin-scale sediment model (building on HEC-HMS)
- Strengthened knowledge base and capacity
 - Inventory of existing data, models, and practices and identification of data gaps and research needs
 - Capacity building through training and joint sampling campaign
- Framework for integrated sediment management
 - Delineation of Sediment Management Units (SMUs)
 - Economic and environmental assessment of sediment impacts
 - Updated outline and roadmap for a basin-wide sediment management plan

Hydrological Study for the Sava River Basin

Main objectives:

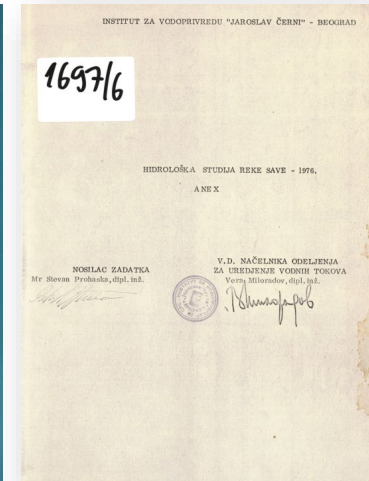
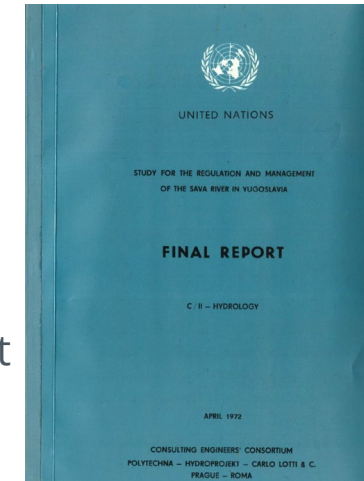
- Enhance knowledge of the water cycle dynamics
- Improve hydrological and meteorological data reliability and management
- Better informed decision-making on sustainable water resources management

Specific objectives:

- Hydrological Study for the Sava River Basin
- A web-based tool for presentation and use of the Hydrological Study
- Knowledge transfer and capacity building
- Recommendations for future activities and developments

Main Outputs:

- Methodology for the preparation of the Study



Vodostaj u 1945 godini

185 Vodomer br. 184 na r. Vrbasu u Kozluku (Jajcu) P. s. 2145 km ² Kota „O“ — 342.47													186 Vodomer br. 186 na r. Vrbasu u Banja Luci P. s. 3397 km ² Kota „O“ — 151.55m												
Dan	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Dan	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	64	36	28	90	70	30	-1	-22	-35	0	-90	5	1	152	130	122	185	164	125	98	84	79	134	87	112
2	62	34	70	80	74	26	-1	-16	-39	-10	-31	4	2	152	130	122	185	164	125	98	84	79	134	87	112
3	60	33	64	80	120	24	-2	-17	-39	-10	-32	8	3	152	130	122	185	164	125	98	84	79	134	87	112
4	58	32	60	110	100	22	-2	-17	-39	-10	-33	2	4	152	130	122	185	164	125	98	84	79	134	87	112
5	56	31	56	104	80	20	-3	-18	-40	-10	-34	2	5	152	130	122	185	164	125	98	84	79	134	87	112
6	55	30	52	100	74	18	-5	-18	-42	-10	-35	1	6	152	130	122	185	164	125	98	84	79	134	87	112
7	54	30	50	100	72	17	-4	-19	-40	-10	-36	0	7	152	130	122	185	164	125	98	84	79	134	87	112
8	53	30	48	98	70	16	-4	-20	-38	-10	-34	-1	8	152	130	122	185	164	125	98	84	79	134	87	112
9	52	28	40	96	68	15	-5	-21	-36	-12	-32	-2	9	152	130	122	185	164	125	98	84	79	134	87	112
10	51	30	38	95	68	15	-6	-22	-30	-14	-10	-3	10	152	130	122	185	164	125	98	84	79	134	87	112
11	50	30	36	92	67	14	-7	-23	-22	-16	-30	-4	11	152	130	122	185	164	125	98	84	79	134	87	112
12	49	40	30	70	65	12	-1	-24	-33	-17	-50	-4	12	152	130	122	185	164	125	98	84	79	134	87	112
13	48	44	30	70	64	10	-2	-25	-34	-18	-50	-6	13	152	130	122	185	164	125	98	84	79	134	87	112
14	47	46	30	80	62	10	-4	-26	-35	-19	-54	-6	14	152	130	122	185	164	125	98	84	79	134	87	112
15	46	44	40	78	56	10	-8	-29	-36	-20	-53	-7	15	152	130	122	185	164	125	98	84	79	134	87	112
16	45	46	70	80	58	18	-7	-38	-37	-21	-52	-8	16	152	130	122	185	164	125	98	84	79	134	87	112
17	44	44	40	100	76	24	15	-9	-30	-34	-23	-10	17	152	130	122	185	164	125	98	84	79	134	87	112
18	42	40	100	76	24	15	-9	-30	-34	-23	-18	-10	18	152	130	122	185	164	125	98	84	79	134	87	112
19	40	36	90	74	60	14	-10	-31	-49	-24	-16	-6	19	152	130	122	185	164	125	98	84	79	134	87	112
20	38	34	80	72	56	13	-11	-30	-48	-24	-16	-6	20	152	130	122	185	164	125	98	84	79	134	87	112
21	37	32	70	74	54	12	-12	-22	-36	-25	-12	-20	21	152	130	122	185	164	125	98	84	79	134	87	112
22	36	30	60	60	52	11	-13	-24	-34	-25	-10	-20	22	152	130	122	185	164	125	98	84	79	134	87	112
23	34	29	60	60	50	10	-14	-26	-40	-26	8	-84	23	152	130	122	185	164	125	98	84	79	134	87	112
24	32	28	70	62	48	9	-15	-27	-40	-27	6	-130	24	152	130	122	185	164	125	98	84	79	134	87	112
25	34	27	74	78	44	8	-16	-28	-30	-28	4	-140	25	152	130	122	185	164	125	98	84	79	134	87	112
26	34	26	80	70	40	6	-17	-29	-18	-20	26	110	26	152	130	122	185	164	125	98	84	79	134	87	112
27	32	25	80	74	42	7	-18	-30	-10	-21	16	80	27	152	130	122	185	164	125	98	84	79	134	87	112
28	36	24	90	72	32	2	-19	-31	-10	-22	10	70	28	152	130	122	185	164	125	98	84	79	134	87	112
29	46	100	72	38	1	0	-20	-32	0	-24	8	60	29	152	130	122	185	164	125	98	84	79	134	87	112
30	48	100	70	28	0	0	-21	-33	10	-25	6	50	30	152	130	122	185	164	125	98	84	79	134	87	112
31	38	100	28	0	0	0	-22	-34	-26	-24	45	45	31	152	130	122	185	164	125	98	84	79	134	87	112
S. v.	48	34	65	88	52	15	-5	-25	-32	-16	2	27	S. v.	162	142	137	178	145	106	92	83	84	101	117	138
V. v.	64	48	100	110	120	30	-1	-16	10	-0	50	180	V. v.	152	130	122	185	164	125	98	84	79	134	87	112
M. a.	82	24	28	20	26	0	-22	-34	-42	-28	-38	-10	M. a.	162	142	137	178	145	106	92	83	84	101	117	138
1945	S. v. 21	V. v. 180	M. a. 42	V. v. 480	V. m. v. 52								1945	S. v. 21	V. v. 180	M. a. 42	V. v. 480	V. m. v. 52							

Hydrological Study for the Sava River Basin

- Data digitalization, collection, storing
 - All relevant data and information for period 1926-2024 collected and stored, including digitalization if necessary
- Data assessment, processing, validation and standardization
 - Data accuracy (correctness of the data) and validity (applicability of the data to the purpose) performed
 - Time series per station created as a convenient sequence of validated data of hourly, daily, seasonal or annual observations of each variable
 - Reliability and usefulness of data by treating data samples against spurious error and systematic error
 - Missing data supplemented and filled using appropriate methods and/or models
 - Elaboration of hydrological conditions on unstudied catchments and catchments with gaps in observations
 - Standard statistical tests and analyses, including tests of randomness, independency, homogeneity, and stationarity as well as analysis of climate normals
 - Anthropogenic impacts on the water regime, especially on low flows and floods detected and analysed (data samples with and without the impact of hydropower storages, flood protection measures and other anthropogenic changes developed in the past 50 years)
 - Data standardized, respecting the WMO/OGC requirements (e.g. Water ML 2.0)



Hydrological Study for the Sava River Basin

- The Hydrological Study for the Sava River Basin
 - Hydro-meteorological investigation; Climate characteristics; Water level and Discharge data analysis; Runoff/flow analysis at the basin level; Representative periods for definition of hydrologic characteristics; Characteristics of average discharge; High flow; regime; Low flow regime; Water balance; Representative inland waterway parameters; Hydrogeological analysis
- A web-based tool for the presentation of the Study
- Appropriately trained staff to ensure continued use after installation and delivery. All training materials delivered.
 - 3 training sessions, each lasting up to 3 days
 - Intermediate workshop, after development of a mature draft of the Study and installation of the web-based tool
 - Final conference
- Recommendations for future studies and developments
 - A report describing recommended investments which will lead to future hydrological analysis and studies as well as improvements of the tool for presentation of the Study
 - A proposal for an update of the Data Policy document based on the findings from the Study and trends in hydrological data management
 - Evaluation of data monitoring systems - gap analysis and investment program

Climate Change Adaptation Strategy for the Sava River Basin

Main objective

- to develop the **CCA Strategy** and to define **adaptation measures**

Specific objectives

- Strengthen stakeholder capacity for coordinated, basin-wide CCA
- Assess climate risks and impacts on water systems and dependent sectors
- Define a vision and identify suitable adaptation options
- Develop an action plan with priority projects and investments
- Create a user-friendly web tool to share strategy results
- Establish a monitoring framework with indicators to track and adjust progress



Climate Change Adaptation Strategy for the Sava River Basin

Main Outputs

- Baseline Analysis & Policy Alignment
 - Review existing climate change adaptation (CCA) policies, strategies, and projects in Sava countries
 - Identify institutional roles, governance structures, and coordination mechanisms
- Climate & Impact Assessment
 - Analyze historical climate trends and future climate scenarios
 - Perform basin-wide impact assessment using climate variables (temperature, precipitation, hydrology)
 - Utilize models (e.g., E-HYPE, VIC, HEC-HMS) and public datasets (e.g., Copernicus)
- Vulnerability, Risk & Gap Assessment
 - Assess vulnerabilities of water systems, infrastructure, ecosystems, and key sectors
 - Identify risks, impacts, and uncertainties across short-, medium-, and long-term horizons
 - Develop a harmonized methodology for risk and vulnerability assessment
- Stakeholder Engagement & Governance Design
 - Conduct stakeholder mapping and analysis
 - Ensure inclusive participation (including gender and vulnerable groups)
- CCA Strategy & Action Plan Development
 - Identify, assess, and prioritize adaptation measures
 - Define monitoring & evaluation framework and indicators for implementation
 - Develop interactive web-based tool for dissemination and decision support

Thank You



Key messages and next steps

Thomas Dworak

Project Coordinator

Fresh Thoughts Consulting

Your insights help us improve. Please scan to complete our survey.



SAVA

Thank you!

