Activities and plans of LIFE Living rivers project - on migration passability of Gabčíkovo structures

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Connecting the dots for migratory fishes
7 October 2025, Budapest

Co-funded by the European Union

Project

Implementation of the river basin management plan in selected river-sub-basins in Slovakia

Call	**LIFE Strategic Nature and Integrated Projects (SNaP/SIP)**
Acronym	**LIFE21-IPE-SK-LIFE Living Rivers**
Project code	**101 069 837**
Duration	**1.1.2023 - 31. 12. 2032**
Budget	**27 799 402,33 €**
EU contribution	**16 677 073,39 €**

Project Partners

Výskumný ústav vodného hospodárstva

Tatranský národný park TANAP

Štátna ochrana prírody Slovenskej republiky

Ministerstvo životného prostredia Slovenskej republiky

Fakulta rybářství a ochrany vod Faculty of Fisheries and Protection of Waters

Jihočeská univerzita v Českých Budějovicích University of South Bohemia in České Budějovice

Slovenský vodohospodársky podnik, štátny podnik

Vodohospodárska výstavba

Bratislavské regionálne ochranárske združenie BROZ

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T.2.3 Re-establishment of migration routes for sturgeon species on the Danube river and re-connection of its floodplain habitats (2024-2027)

Objectives:

- Construction and technical parameters of the **Čunovo** fishpass – verification of several alternatives
- Construction and technical parameters of the **Gabčíkovo** fishpass - technical fishpass or bypass through the branch system, old riverbed
- Reconstruction of the **Dunakiliti** sill and dam
- Revitalization of Danube branches, creation of suitable habitats for fish, support for improving morphology, etc.

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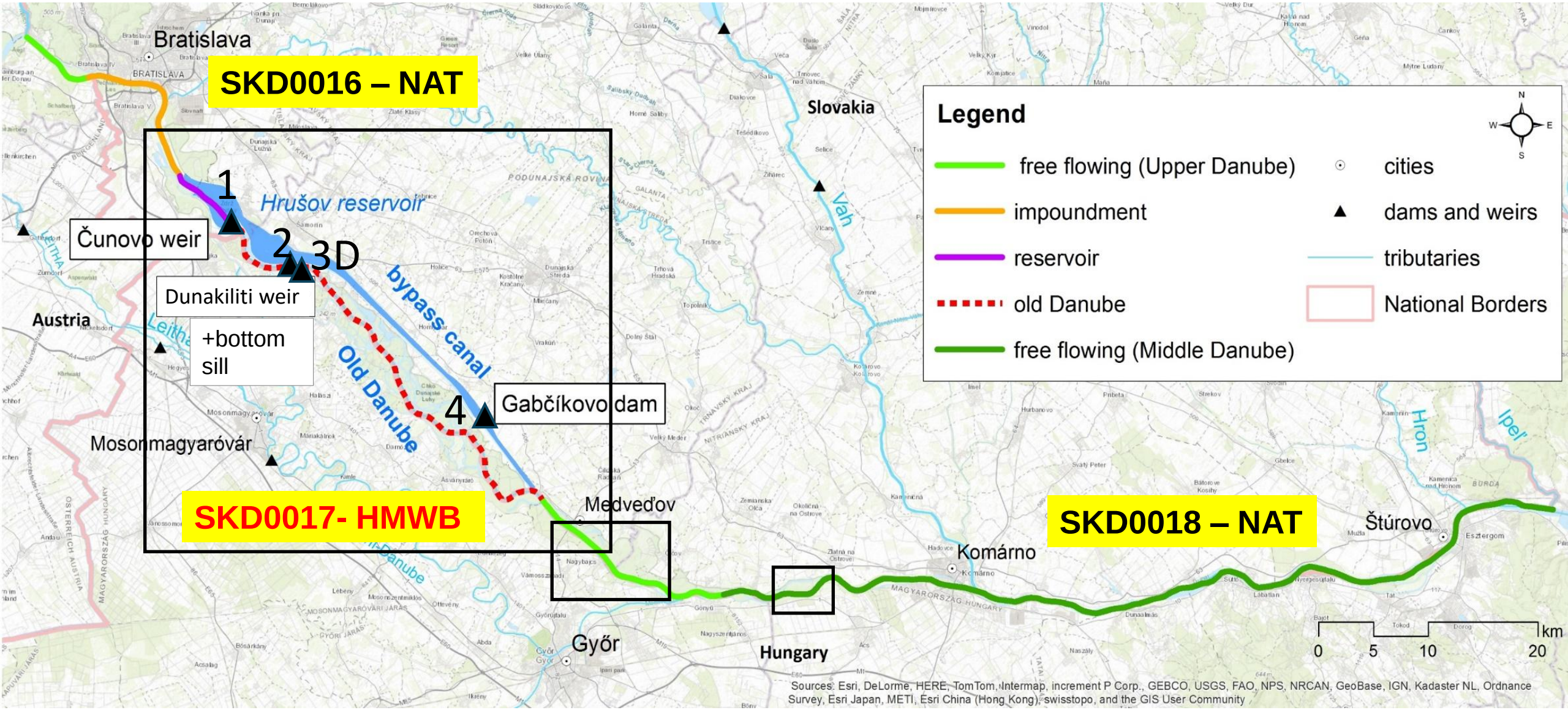

Ecological status/potential: 3 (moderate)

Slovak section of the Danube river: 172 km

Barriers on the Danube and canal

Dunakiliti dam 3 (HU)
and bottom sill 2 (SK/HU)

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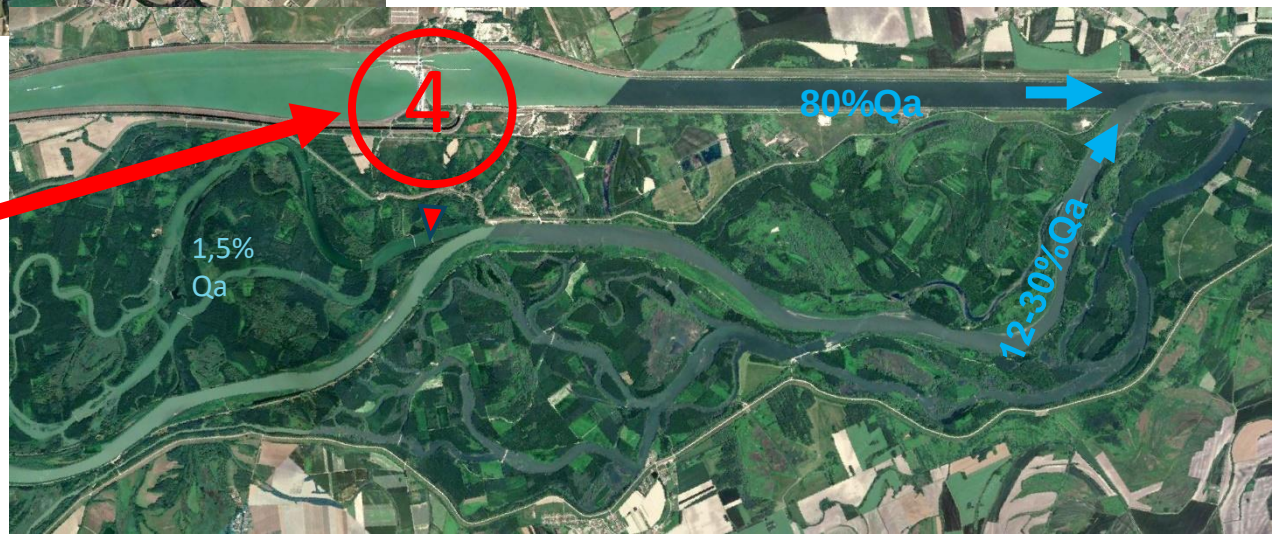
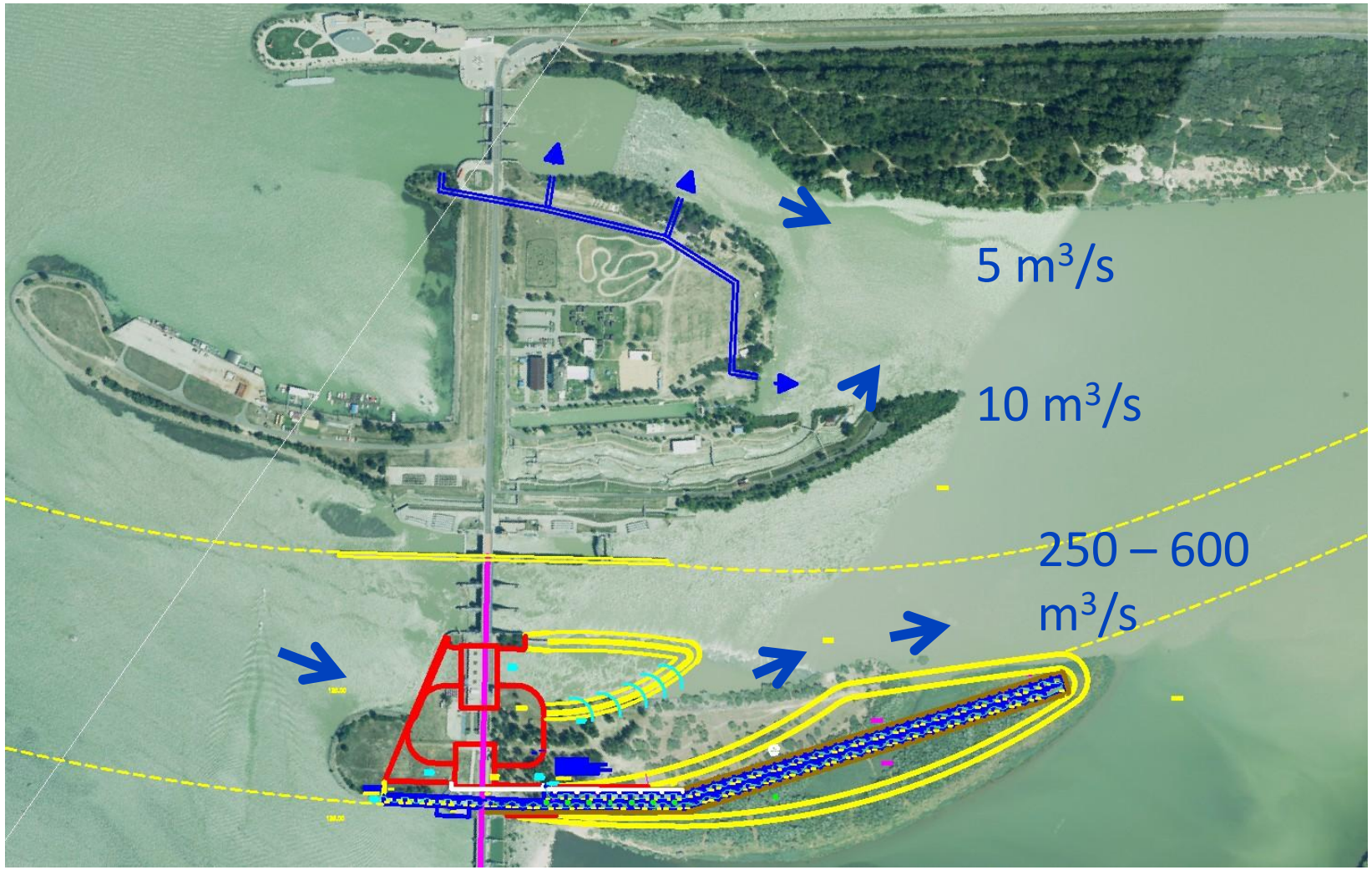
Čunovo dam

Gabčíkovo HPP



Čunovo dam

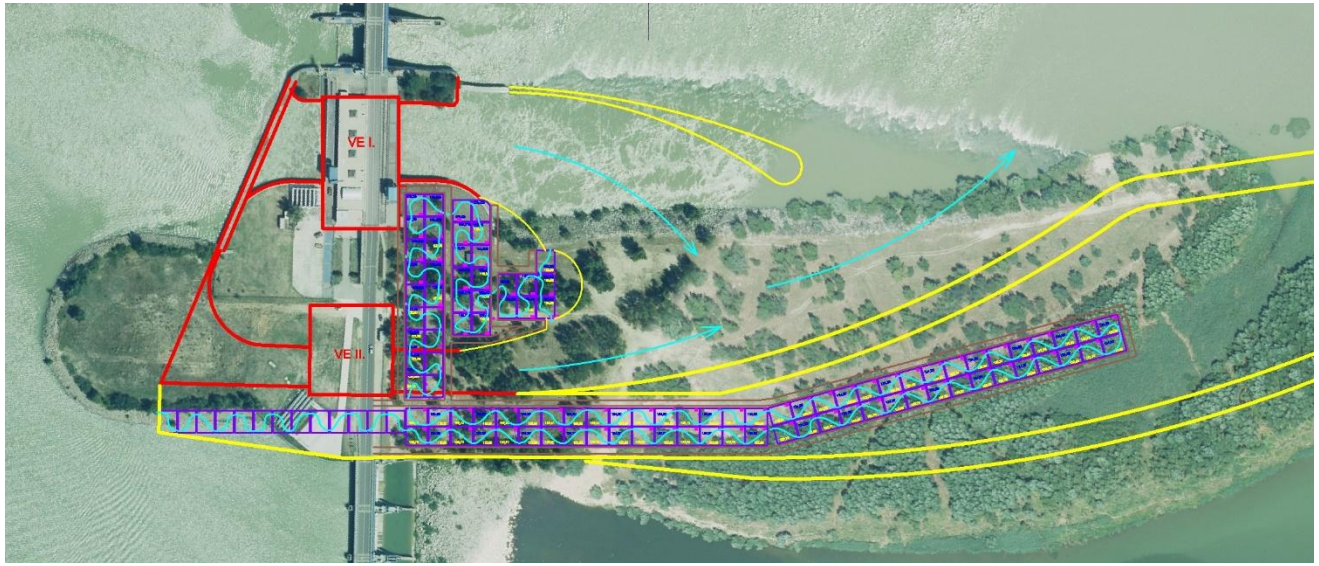
- Reconstruction of HPP – 2nd HPP being projected - ca 2028-2032 in operation
- **Main fishpass:** giant sturgeon (size 4 m), sterlet - *acipenser ruthenus, barbus barbus, aspius aspius*
- **Secondary fishpass -** slow migratory species



Čunovo main fishpass

- Recommended type for the main fishpass: Type 7 **pool fishpass**, in the island, preferably with stone-gravel bottom; on the lower end fixed with concrete (flood discharges etc.)
- Fish: giant sturgeon (size 4 m), sterlet - *acipenser ruthenus, barbus barbus, aspius aspius*

- 107 pools, discharge 9,5 m^3/s, additional discharge 5 m^3/s, at the outflow 14,5 m^3/s
- 2 variants of outflow – considering operation of 2 HPPs



Pool fishpass parameters

Water level difference	8 cm	
Max velocities in slots	1,25 m/s	
Min. velocities in slots	0,75 m/s	
Slot width	3,2 m	(4x fish width)
Pool size	10 x 12 m	(4x fish length)
Pool depth	2,50 m	(3x fish height)
Depth on the outflow	4,50 m	

Upper water level 130,10 - 131,10 m n.m.

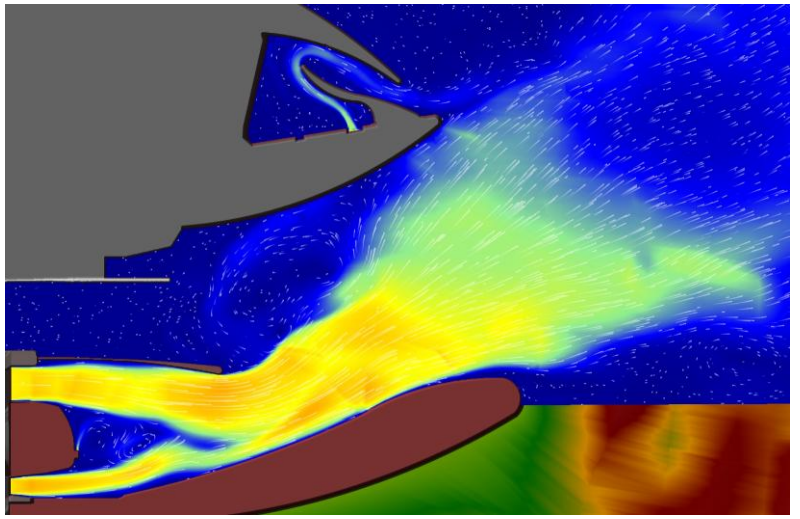
Lower water level 123,80 m n.m. Q=800 m^3/s
123,70 m n.m. Q=600 m^3/s
123,16 m n.m. Q=400 m^3/s
(minimum for giant sturgeon)
122,50 m n.m. Q=250 m^3/s

Outflow bottom elevation 118,00 m n.m.

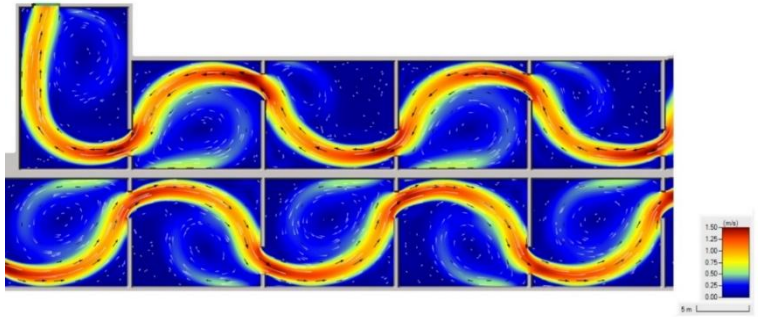
Outflow in appropriate distance from the HPP+ 2,5 m deep channel to the Danube

Modelling in progress

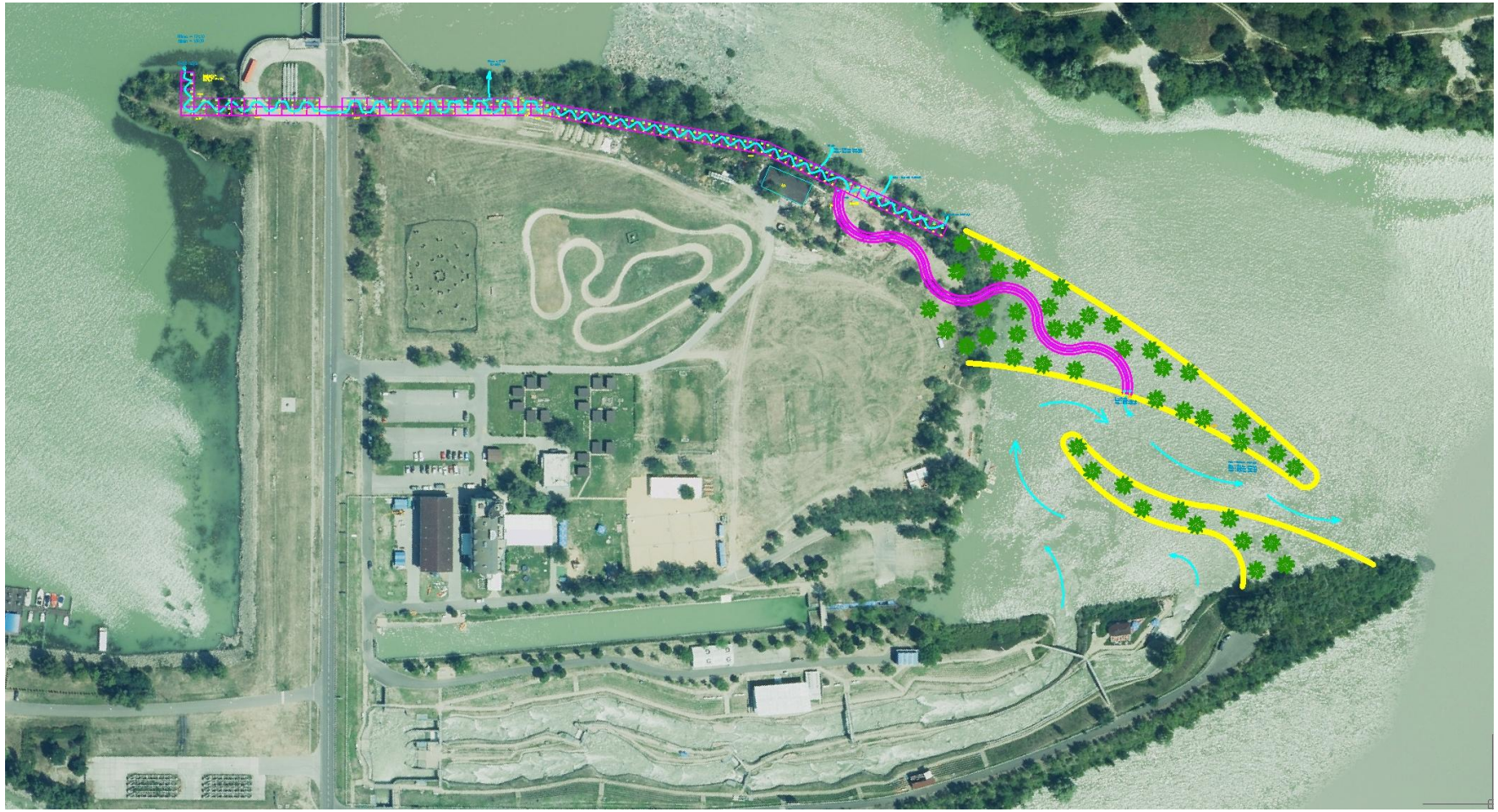
2D numerical modeling of flow velocity and directions for design flows through hydropower plant



Flowing in pools:



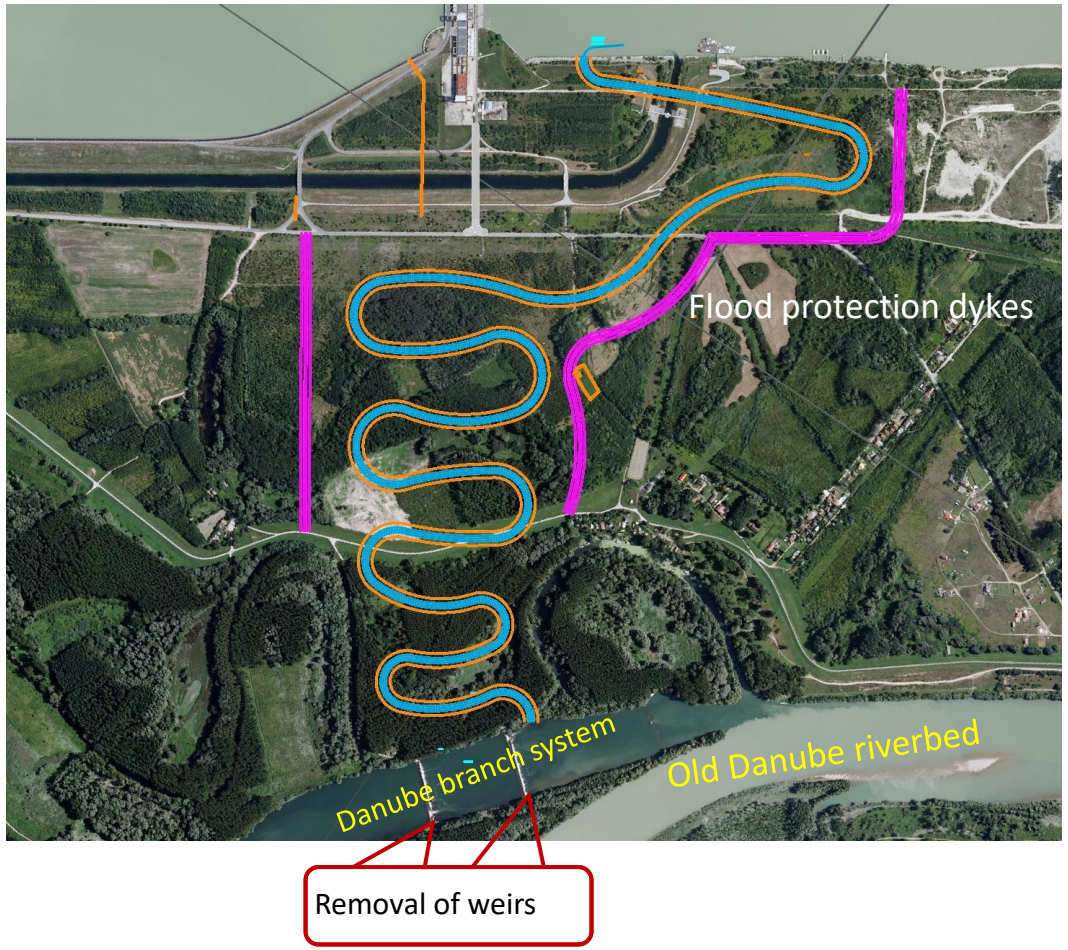
Čunovo – secondary fishpass



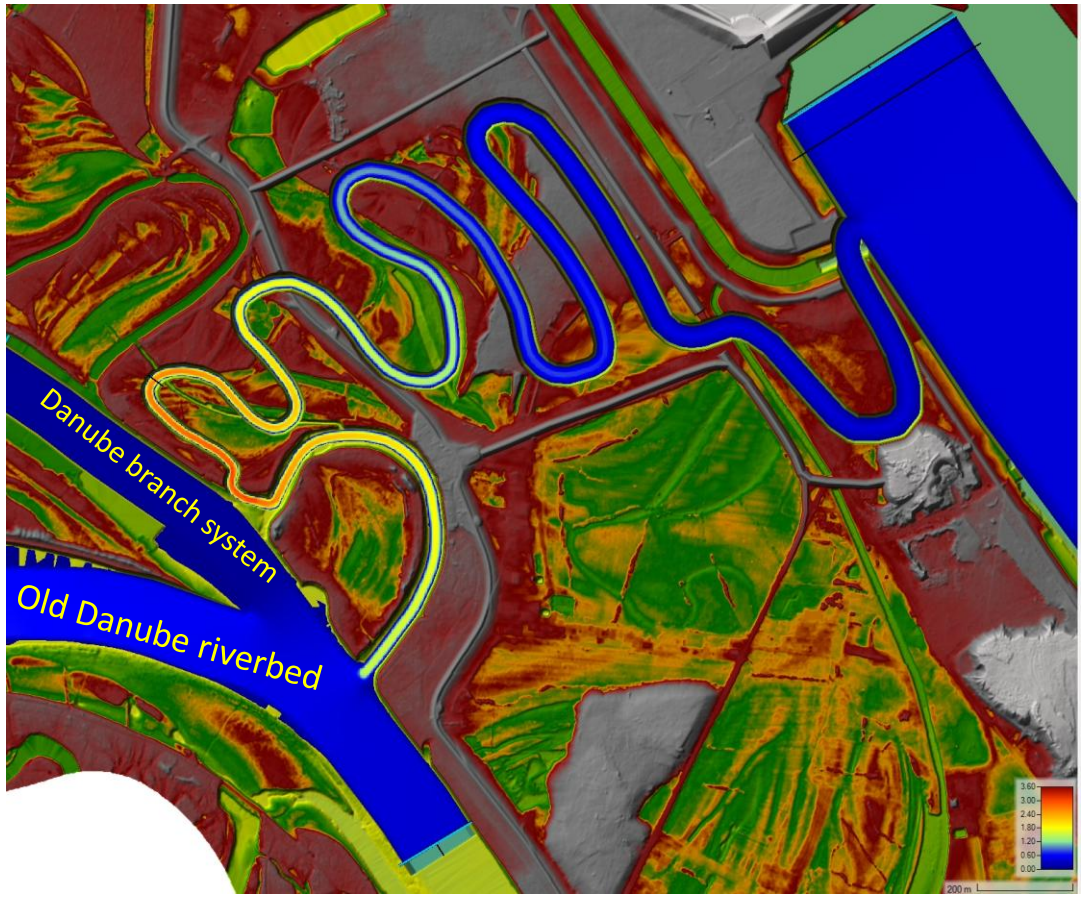
- Combined pool fish ladder with biocorridor
- Target fish: barbel, nase, asp, silver bream, catfish, carp, etc.
- 3 outlets: into the pool, under the slide, and to the wild water outlet

Fishpass Gabčíkovo

Variant A

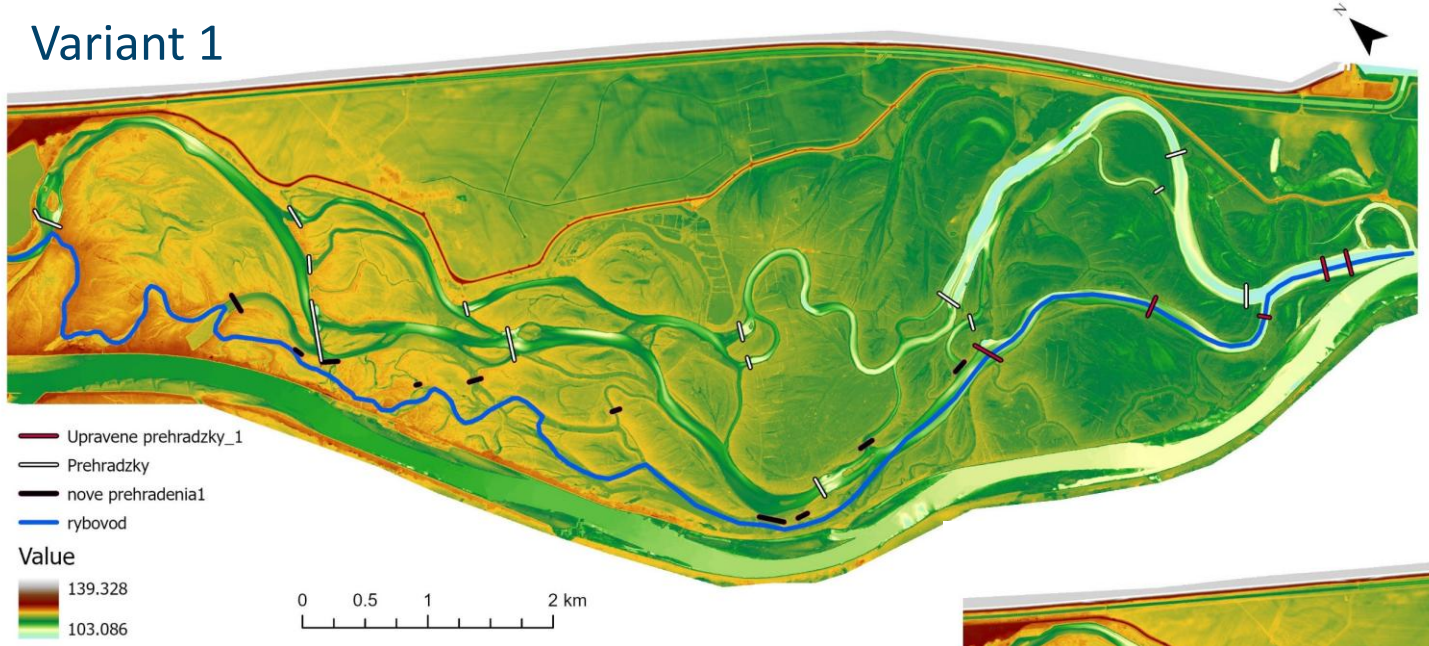


Variant B

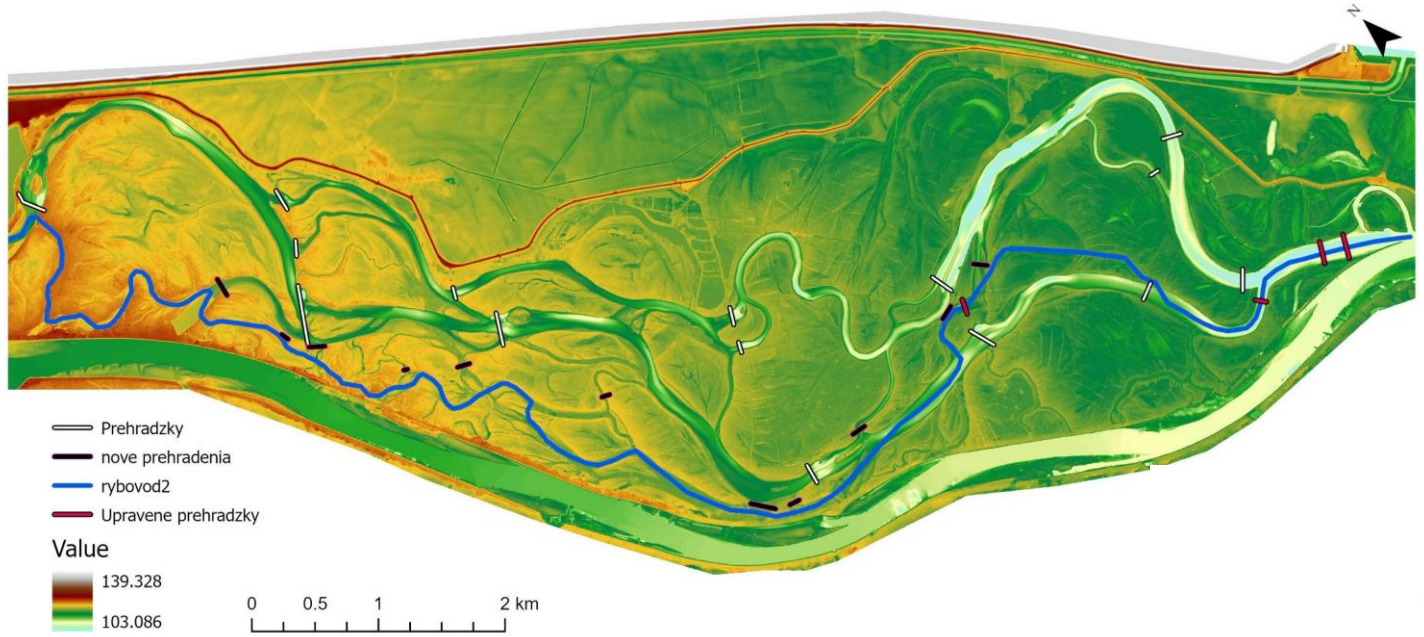


Removal of barriers and interconnection of parallel branches

Variant 1

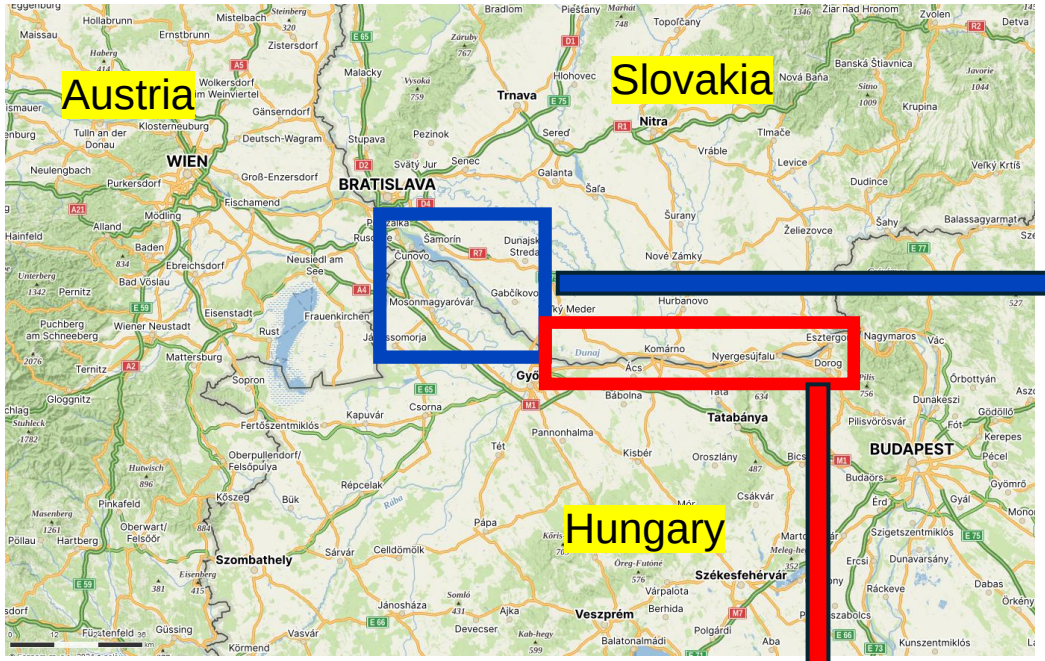


Variant 2

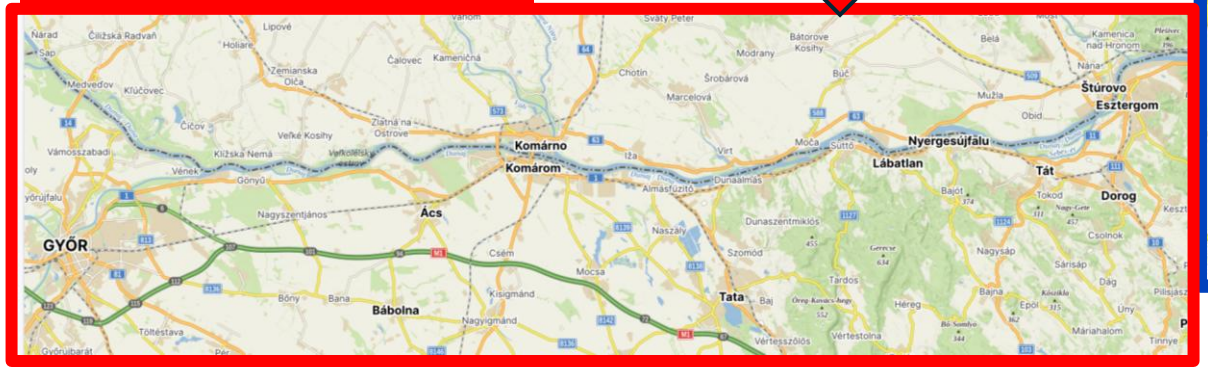


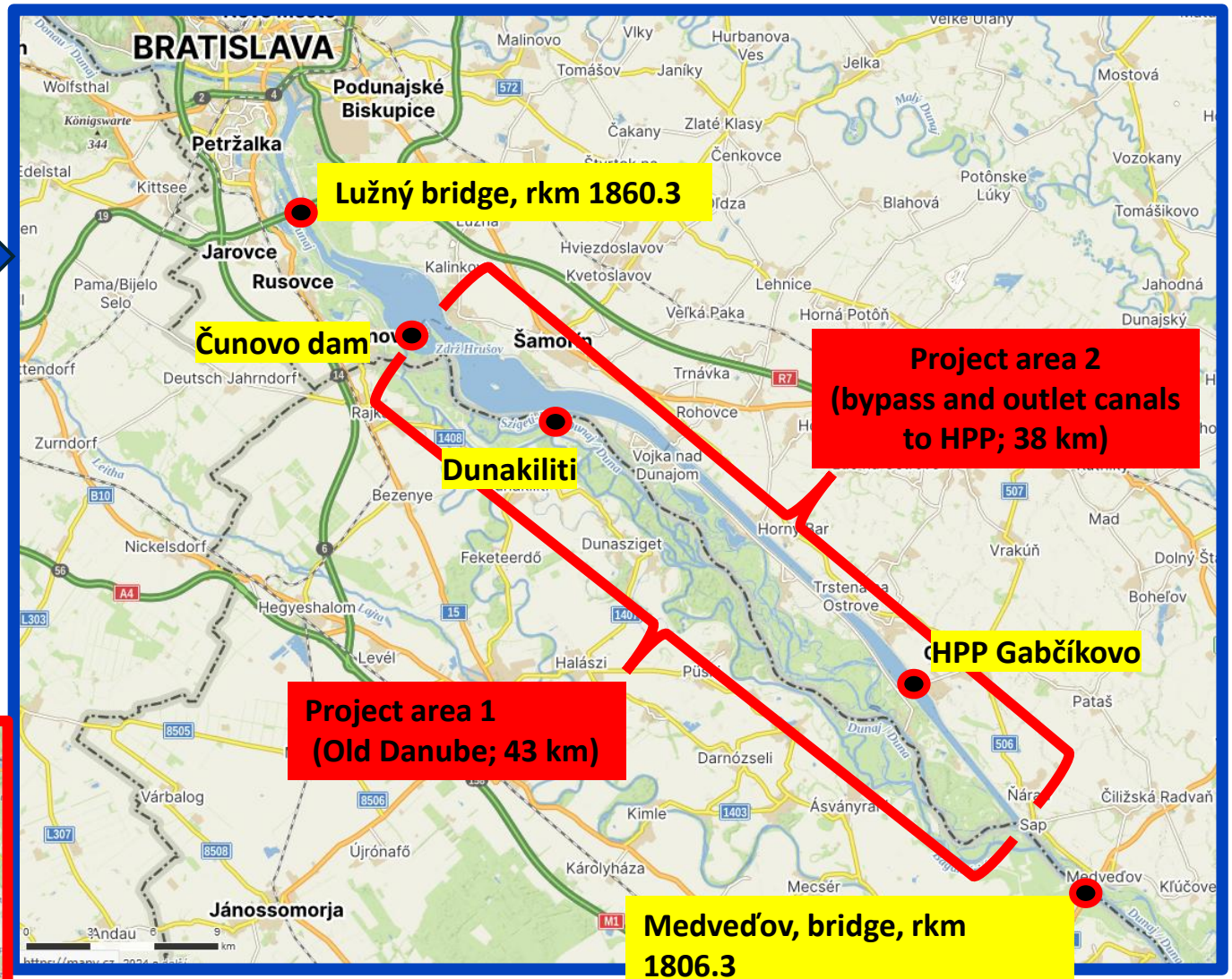
T.6.4 Telemetric surveys of passability of the Danube for fish in the Slovak Republic

Map of monitored area for telemetric study (new telemetric gates + ichtyological monitoring)



NEW monitored area (Medveďov-Štúrovo)





Thank you for your attention

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