

10th Meeting on the Follow-up of the Joint Statement on Guiding Principles for the Development of Inland Navigation and Environmental Protection in the Danube Basin

INLAND WATERWAY ON SAVA RIVER (km 300 – km 329)

Authors:

Institut IGH

Hidrokonzalt projektiranje

Elektroprojekt

Budapest, September 11 – 12, 2019

SUMMARY

Ministry of the Sea, Transport and Infrastructure:

- Introduction

Institut IGH/Hidrokonzalt projektiranje:

- Hydrological analysis
- Hydraulic analysis
- Optimal solution

Elektroprojekt:

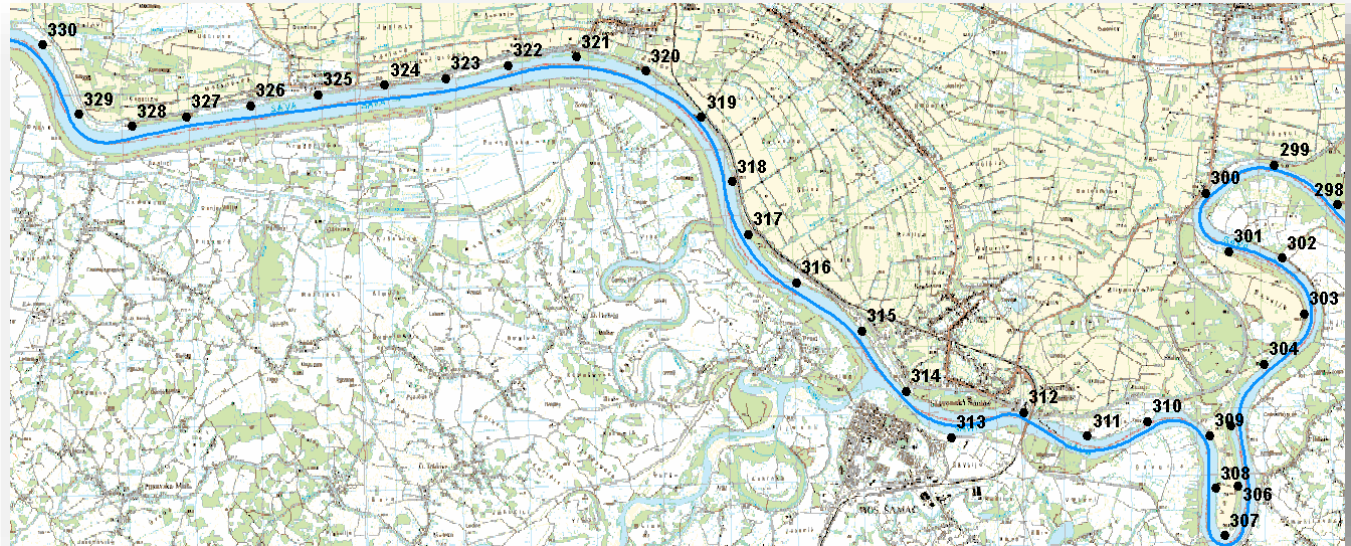
- Environmental study

INTRODUCTION

- **Beneficiary:**
Ministry of the Sea, Transport and Infrastructure, Croatia, Zagreb
(Originally: Agency for Inland Waterways, Croatia, Vukovar)
- Preparation of EIA Study and Design Documentation for the river Sava IW section between rkm 329 to 315 and 312+200 to 300
- EU co-funding: CONNECTING EUROPE FACILITY (CEF)
- Grant contract signed in October 2017
- Project duration: Jan 2018- Dec 2020
- Sava River – border between Croatia and Bosnia and Herzegovina

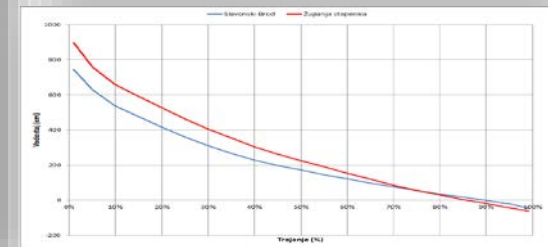
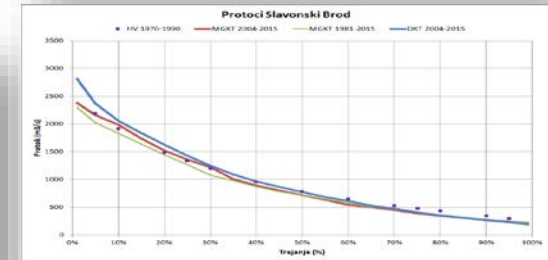
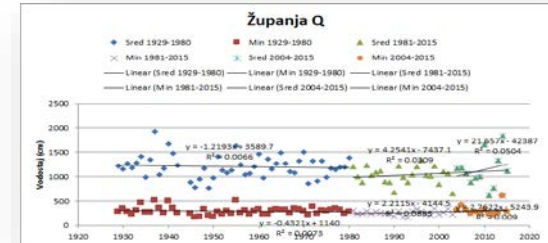
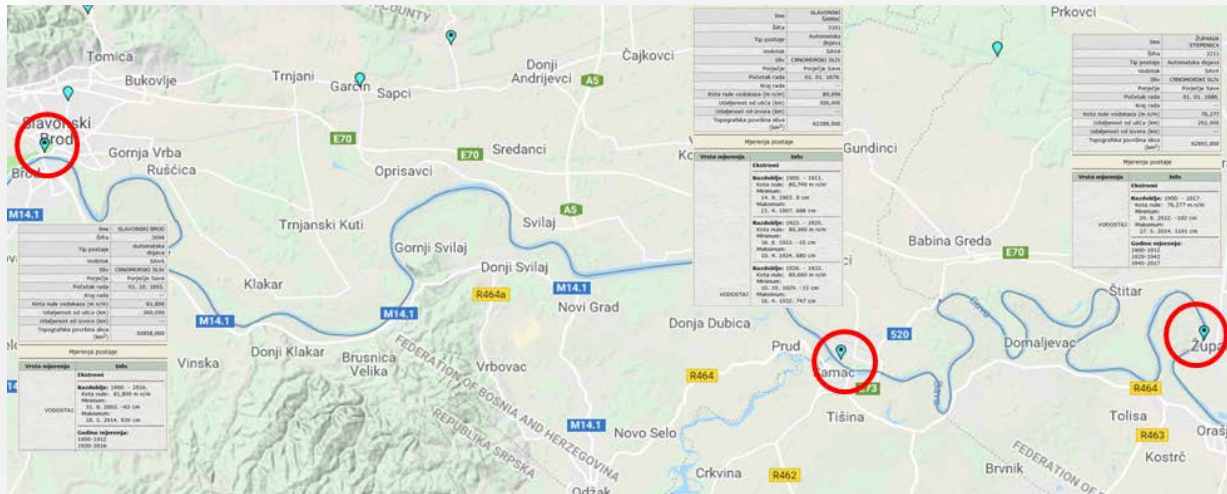
INTRODUCTION

- Most critical section of Sava river inland waterway between Belgrade (Serbia) and Sisak (Croatia) between km 320 and km 329 (Jaruge-Novi Grad)
- Part of European agreement on main inland waterways of international importance (AGN)
- Currently: Class III
- Intention: Class IV



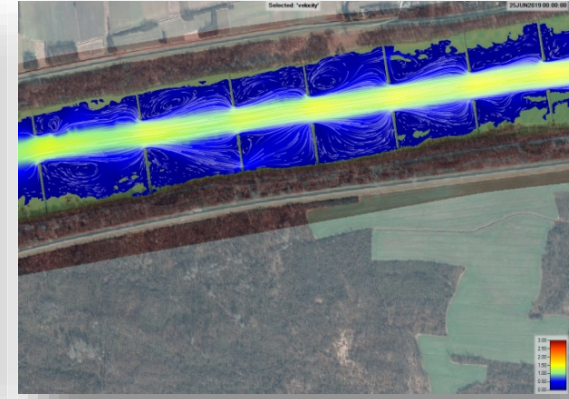
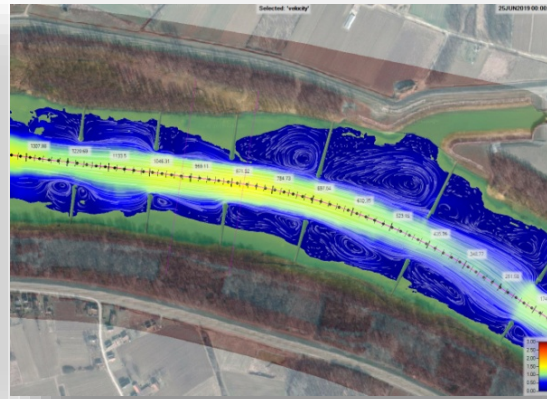
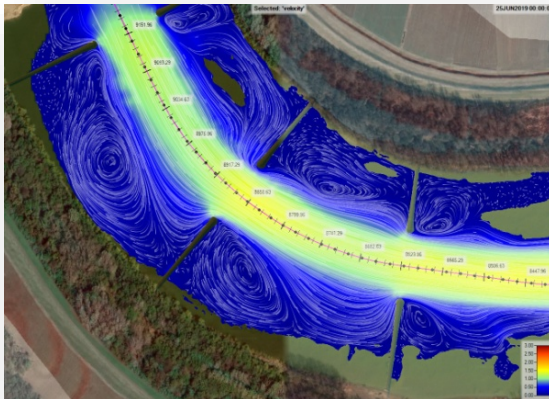
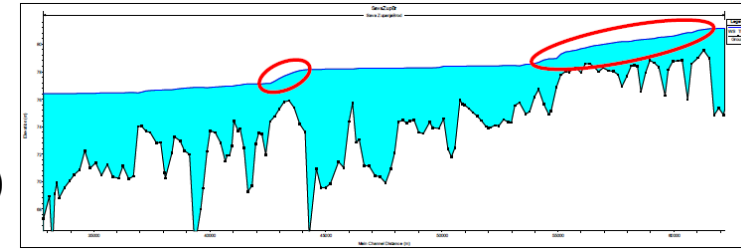
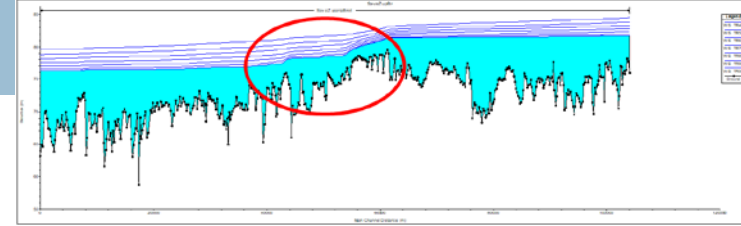
HYDROLOGICAL ANALYSIS

- Hydrological stations: Slavonski Brod (km 378), Slavonski Šamac (km 306) and Županja stepenica (km 262)
- Stationarity and homogeneity analyses
- Water-level/discharge duration curves
- Adopted duration curves/values



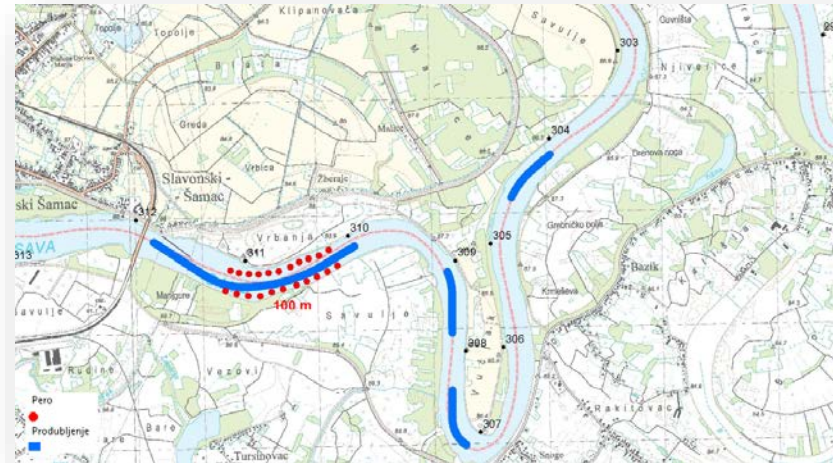
HYDRAULIC ANALYSIS

- 1D (HEC-RAS 5.0.6)
- Length 104 km, 544 cross sections
- Critical values km 300 – km 329
- Critical sections:
 - Jaruge – Novi Grad (km 320 – km 329)
 - Slavonski Šamac downstream (km 310 – km 312.2)
- 2D hydraulic analysis (HEC-RAS 5.0.7)



OPTIMAL SOLUTION

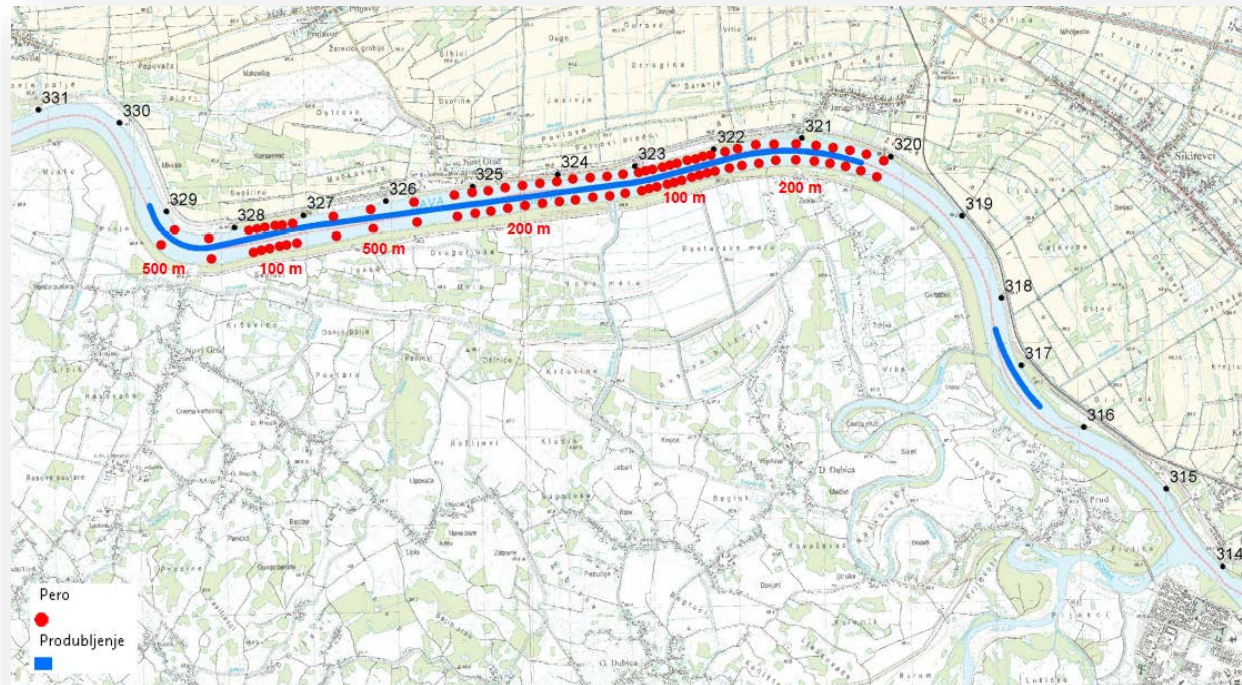
- **Analyzed potential solutions:**
 - ✓ Bottom deepening along the waterway
 - ✓ Groynes construction along critical sections
 - ✓ Combination of bottom deepening and groynes construction
- **Multiple-criteria analysis**
- **Section km 300 - km 312:**
 - ✓ km 304.2 – km 304.7 – bottom deepening
 - ✓ km 307.3 – km 307.8 – bottom deepening
 - ✓ km 308.4 – km 308.9 – bottom deepening
 - ✓ km 310 – 312.2 (Slavonski Šamac downstream) – combination of bottom deepening + groynes



OPTIMAL SOLUTION

Section km 315 - km 329

- km 316 – km 317: bottom deepening
- km 320 – km 329 (Jaruge – Novi Grad): combination of bottom deepening and groynes construction

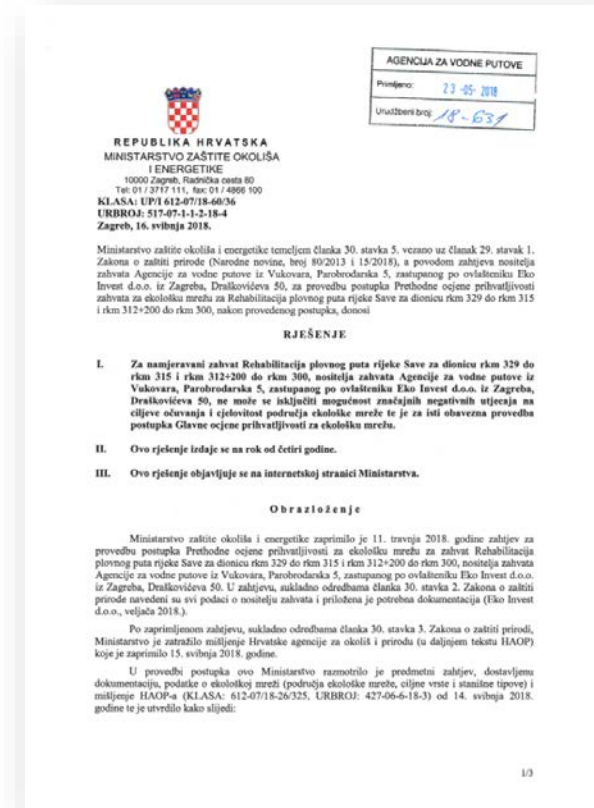


ENVIRONMENTAL STUDY

Pursuant to National legislation the project must undergo **EIA** and **Main Assessment for NATURA2000** procedure.

EIA & Main scope:

- Aquisition of special requests for EIA content from competent ministires and authorities
- Research and description of current state of environment (biodiversity – flora/fauna, water body status, hydrology, hydrogeology.....)
- Assesment of possible impact of project on each environmental component



EIA & Main Assessment scope continued:

- Programme of measures (**mitigation** of possible adverse impacts on the environment)
- EIA procedure with the Ministry of Environmental Protection and Energetics (EIA committee meetings, public participation...)

Good practice examples (proposed mitigation measures):

- ✓ Return of dredged sediment to downstream reaches or suitable locations
- ✓ Construction of declined groynes

THANK YOU FOR YOUR ATTENTION

