Committee G Environment –
Case studies involving planning, construction and operation of dams demonstrating environmental and social benefits

Integration of environmental aspects in the project of run of the river hydropower plant Arto-Blanca, Slovenia

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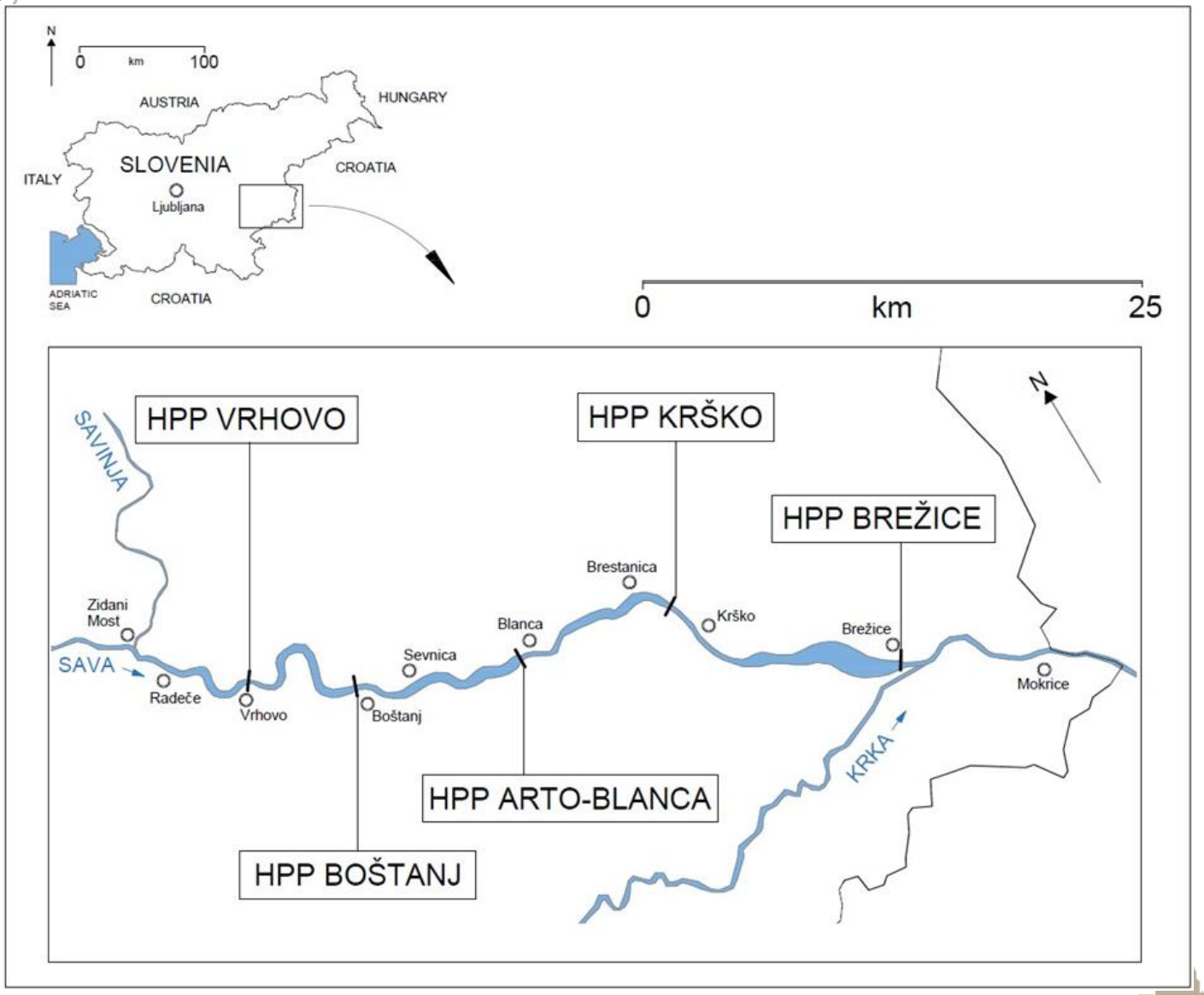
Location and operating framework



- The existing chain of run of the river HPPs in the Lower Sava River
- HPPs are multi-purpose facilities

Technical description of Arto Blanca HPP

- **The construction started in 2005**
- **Operating licence issued in 2011**

Installed discharge	**500 m^3/s**
Nominal head	**9,29 m**
Installed power	**39,12 MW**
Annual production	**148 GWh**
Accumulation volume	**9,95 x 10^6 m^3**

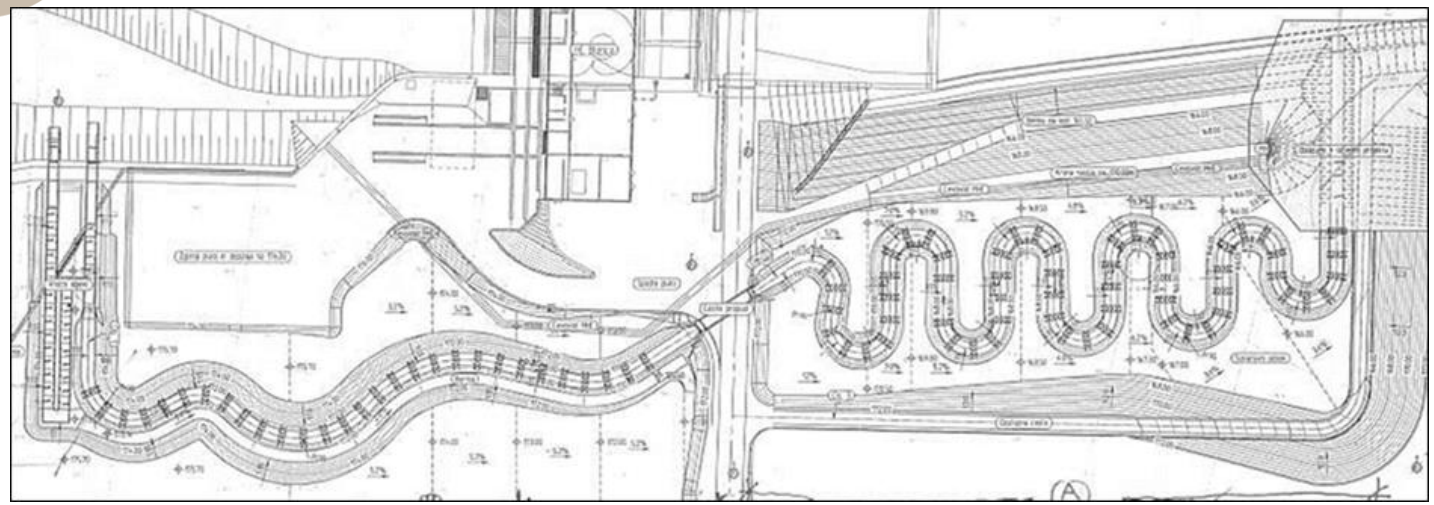
Main environmental baseline features

- Several environmental studies
- **40 fish species,** one lamprey species (34 autochthonous); cyprinids dominated, most of them rheophilous species
- 12 fish species are protected according to EU Habitats Directive
- The construction of HPP ⟹ changes in hydromorphology
- The attitude toward the impact on nature has been changed during the development of the Arto-Blanca HPP
- Nature – friendly solutions ⟹ minimase the effects on nature
- More arrangements have been planned for the well-being of people: walking and cycling trails, boat landing stages, irrigation pumping station

Environmental and social issues

- **Mitigation measures** ⟹ protection and improvement of the ecological status/potential of aquatic ecosystems:
  - ➢ **Silent zones** for the nature protection issues, the **spawning grounds**
  - ➢ The riparian zones were planted with **native trees** and a wetland shoreline was constructed
  - ➢ The construction of **pond** for autochthonous flora and fauna species
  - ➢ Ensuring upstream and downstream fish migration ⟹ fish pass
- **Flood protection** of towns
- **Navigation** ⟹ conditions and restrictions

Fish pass characteristics



- 680 m long
- Flow: 0.5 – 0.9 m^3/s
- 3 different parts

Migration success

- Monitoring 2009-2012: electrofishing, fish traps, telemetry
- 32 different fish species out of 40 species that are characteristic for this part of the Sava River were identified in the fish pass
- all potamodromous fish species can successfully swim the entire fish pass: **Common nase**, European chub, Cactus roach, European barbel
- 7 other species listed in Annex II of the Habitats Directive have been found presumably to be able to swim the entire fish pass.

Conclusions and Lessons Learnt

- A good example of multipurpose uses of run of the river HPPs: the uses of water are complementary and agreed among all users.
- The cumulative aspects of all measures should be taken into account when designing new HPPs to achieve at least good ecological potential.
- The central role of planning HPPs is precisely that through the development of HPPs, with their different views on the environment and technology, engineers and environmentalists were able to unite.
- The knowledge on the fish pass design for the Arto-Blanca HPP has grown up with design of each new fish pass for new HPPs, as well as improved environment measures were done.

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