

8th PA4 Steering Group Meeting

14 October 2014, Bratislava, Slovakia

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Fish migration at the Iron Gates

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Why fish migration?



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Why is ensuring fish migration an issue?



- ▶ Objective **WFD**: „**Good Status**“ for all waters
- ▶ „Good Ecological Status“ of surface waters is inter alia determined by **biological quality element „fish“**
- ▶ Fish needs access to **habitats and spawning grounds** (Short-, Medium- and Long-Distance Migrants) for reproduction
- ▶ Dams and weirs **disrupt river continuity** and access to habitats
- ▶ Limited possibilities for reproduction - **loss of species** - risk to fail WFD objectives and therefore legal obligations



Example: Sturgeons

Species	Known as	Status	Trend
		According to IUCN ¹	
<i>Acipenser gueldenstaedti</i>	Danube sturgeon or Russian sturgeon	Critically endangered	Decreasing
<i>Acipenser nudiiventris</i>	Ship sturgeon or Fringebarbel sturgeon	Critically endangered	Decreasing
<i>Acipenser ruthenus</i>	Sterlet	Vulnerable	Decreasing
<i>Acipenser stellatus</i>	Stellate sturgeon	Critically endangered	Decreasing
<i>Acipenser sturio</i>	Common sturgeon, European sturgeon, Atlantic sturgeon	Critically endangered (extinct in DRB)	Decreasing
<i>Huso huso</i>	Beluga sturgeon or Great sturgeon	Critically endangered	Decreasing

- ▶ „Danube Flagship Species“
- ▶ Critically endangered
- ▶ Multiple pressures - loss of habitats due to river regulation, illegal fishing (caviar!), dams and **disruption of river continuity**



Danube River Basin Management Plan

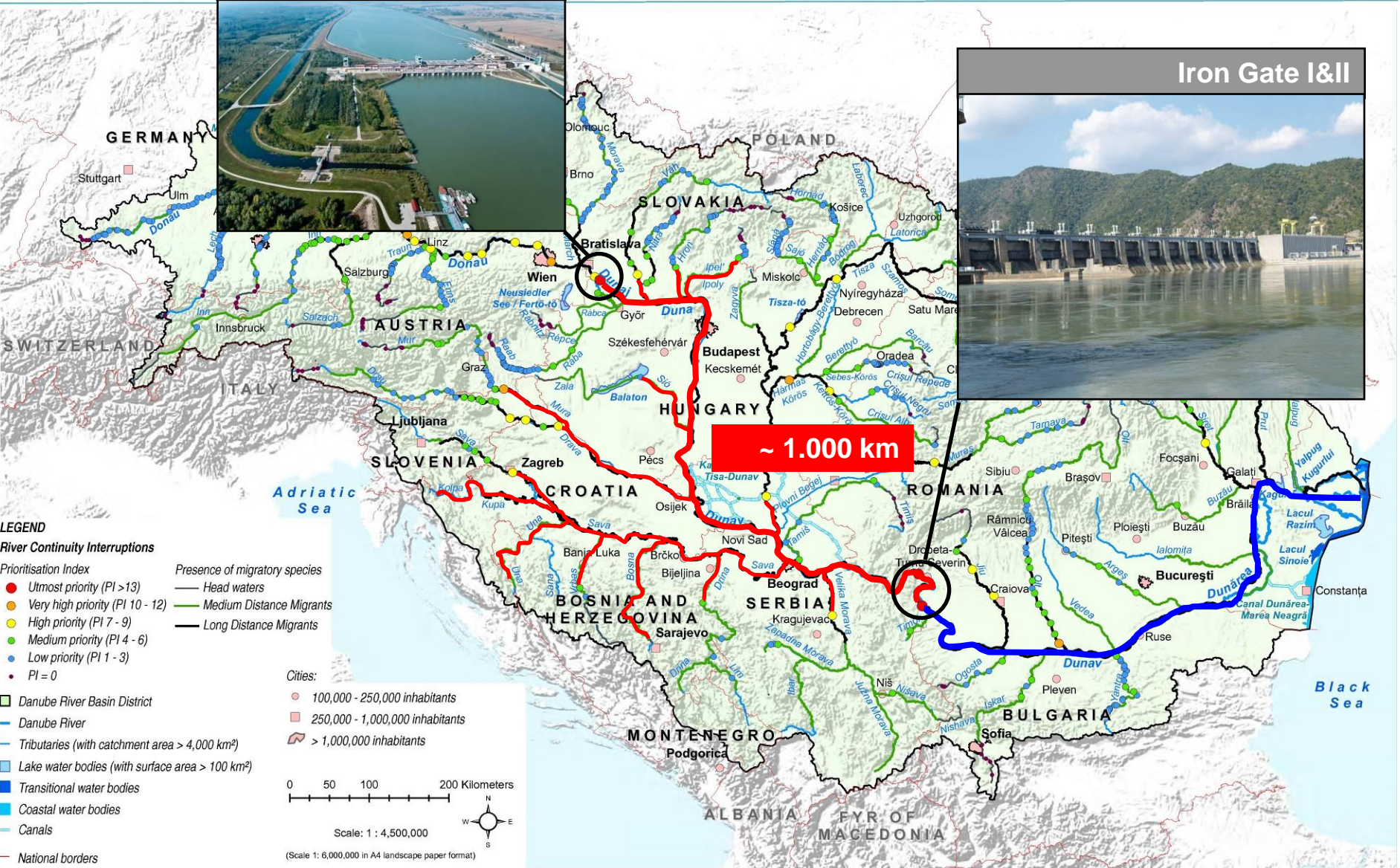
Vision of the Danube countries

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River and Habitat Continuity Interruptions

Anthropogenic barriers and habitat deficits do not hinder fish migration and spawning anymore – sturgeon species and specified other migratory species are able to access the Danube River and relevant tributaries. Sturgeon species and specified other migratory species are represented with self-sustaining populations in the DRBD according to their historical distribution.



The ecological prioritisation approach (Part A) is not meant to substitute similar national approaches but to outline the basin-wide perspective. Low restoration priority indicated on the basin-wide level does not imply that no measures should be undertaken on the national level as all fish species need open river continuity. On the other hand, ecological prioritisation is only one of many aspects in deciding which measures to adopt and implement. Final decisions will be taken at the national level.

This ICPRD product is based on national information provided by the Contracting Parties to the ICPRD (AT, BA, BG, CZ, DE, HR, HU, MD, RO, RS, SI, SK, UA) and CH, except for the following: EuroGlobalMap v2.1 from EuroGeographics was used for national borders of AT, CZ, DE, HR, HU, MD, RO, SI, SK and UA; ESRI data was used for national borders of AL, ME, MK; Shuttle Radar Topography Mission (SRTM) from USGS Seamless Data Distribution System was used as topographic layer; data from the European Commission (Joint Research Center) was used for the outer border of the DRBD of AL, IT, ME and PL.

Vienna, December 2009

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Political agreements and objectives

Danube River Basin Management Plan, 2009

- (...) „performance of a feasibility study to re-open the Iron Gate Dams for free fish migration“ (...)

Danube Ministerial Declaration, 2010

- “welcome and support (...) a feasibility study (...) Iron Gates Dams and ask the ICPDR to intensify its efforts to secure the funding for this study”

EU Danube Strategy Action Plan, 2010 – PA4

- “To make the feasibility study for restoring continuity at the Iron Gates (...)”; Lead: Romania and Serbia

Project “Fish migration Iron Gates I & II” Background

- Initiated by ICPDR in 2013 via mediation from WWF
- Project period: September 2013 – September 2014
- Key objectives:
 - Further elaboration on fish passage possibilities at Iron Gates I & II
 - Monitoring of sturgeon behaviour at Iron Gate II dam
 - Elaboration of joint roadmap on next steps
- Funding: 260.000 EUR
 - Dutch Partners for Water Programme
 - Consortium companies
 - ICPDR
- Project consortium

Project “Fish migration Iron Gates I & II” Activities



- Project kick-off meeting: September 2013, Bucharest
- Monitoring of sturgeon migration patterns below Iron Gate II in spring 2014
- Discussion first project results with group of international experts at Technical Workshop: March 2014, Bucharest
- FAO / DDNI Workshop on „Fish tagging and monitoring in the lower Danube“: 21 - 25 May 2014, Tulcea
- Final „Directors“ Meeting: 12 September 2014, Bucharest
 - Presentation of project results and discussion of next steps
 - Proposal to present project at **PA4 Steering Group Meeting**

Sturgeon monitoring below Iron Gate II dams

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Figure 22 Position of acoustic receivers Iron Gates II complex

Sturgeon monitoring below Iron Gate II dams

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Figure 23 Caught male beluga sturgeon (*Huso huso*) and juvenile stellate sturgeon (*Acipenser stellatus*)

- First tagged beluga detected and observed at Iron Gate II
- Important first information on behaviour and for fish pass design criteria

Potential solutions for migration

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Potential solutions – preliminary results

Upstream migration Iron Gate I

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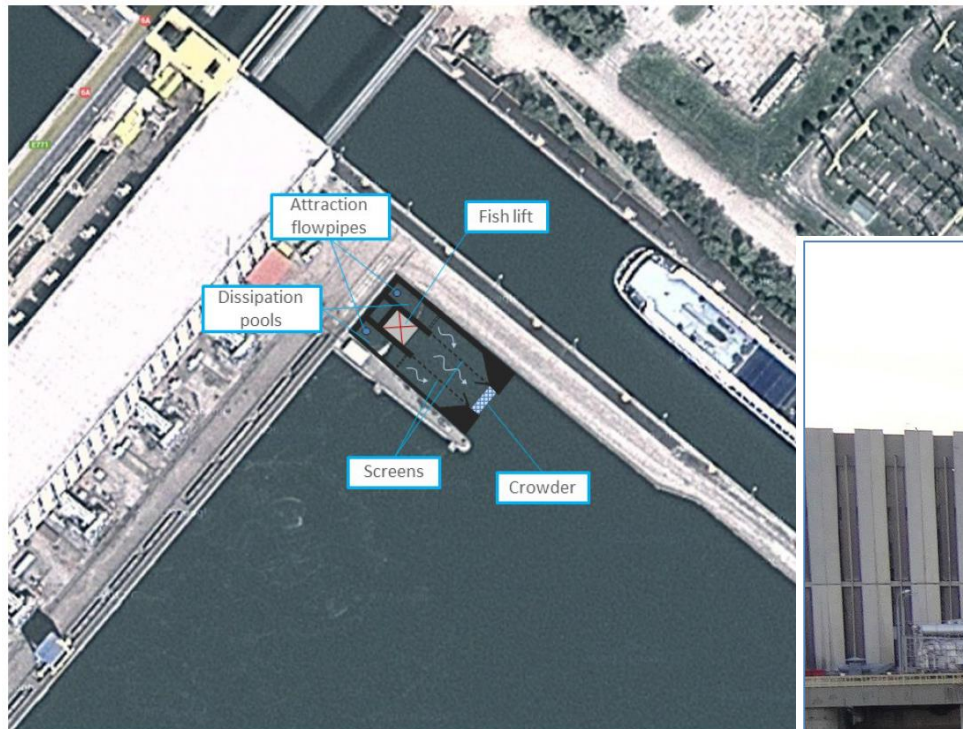


Figure 30: Preliminary design of Iron Gates I fish lift



Figure 29: Potential location of a fish lift at the Iron Gate I hydropower plant on the left bank (Romania)

Potential solutions – preliminary results

Upstream migration Iron Gate II

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Potential solutions – preliminary results

Downstream migration



Figure 32 Bar screen (10 mm spacing, Area = 100 m², width = 12 m, approach velocity = 0.35 m/s) at a small hydropower station in Roermond, Netherlands (Photo: Floecksmühle)

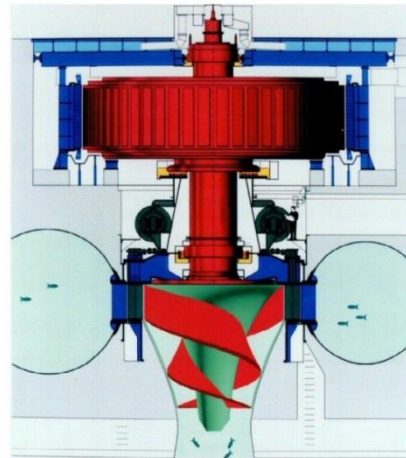
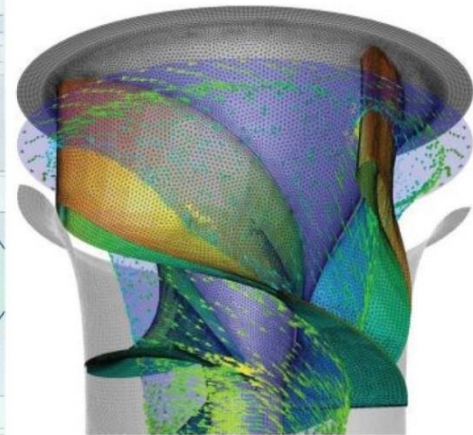


Figure 33: Fish-friendly turbine (www.voith.com/en/products-services/hydro-power/environmentally-friendly-hydro-products/alder-turbine-873.html)



- Considerable uncertainties concerning downstream passage and feasible technologies for safe passage
- Potential alternative management and mitigation approach until adequate fish protection technologies available (e.g. trap and truck)

Draft next steps

- Further investigations and project activities needed
- 4 phases under discussion:
 - Phase 1 (2014-2015): Preparation - test monitoring techniques, genetic analysis sturgeons, organise project funding next phase
 - Phase 2 (2015-2017): Alternatives and preliminary design - monitoring and fish test damage turbine at IG I & II downstream migration, analysis hydrological model, preliminary design of fish migration facilities
 - Phase 3 (2018): Technical design – monitoring, technical design, tender document
 - Phase 4 (2019+): Implementation

Danube Sturgeon Task Force (DSTF)



- Established under EUSDR PA6
- Works on a broader scope towards EUSDR target „to ensure viable populations of sturgeon and other indigenous fish species by 2020”
- Involves different organisations and institutions (PA6, IAD, National Administrations, WWF, ICPDR, World Sturgeon Conservation Society, etc.)
- Strategy and Programme „Sturgeon 2020“ finalised in July 2013
- Main issues under preparation and discussion:
 - Projects on in-situ and ex-situ conservation measures
 - Illegal fishing
 - Prolongation Sturgeon fisheries ban
 - Political support
 - Etc.

Thank you for your kind attention!

For more information please consult the

ICPDR website: <http://www.icpdr.org>

DSTF website: <http://www.dstf.eu/>

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