River Policy Network Conference
15 January 2013, Nagoya

Estuary policies in Europe and Japan

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Rivers are multiple use areas that need complex management

Modern EU policy on environment

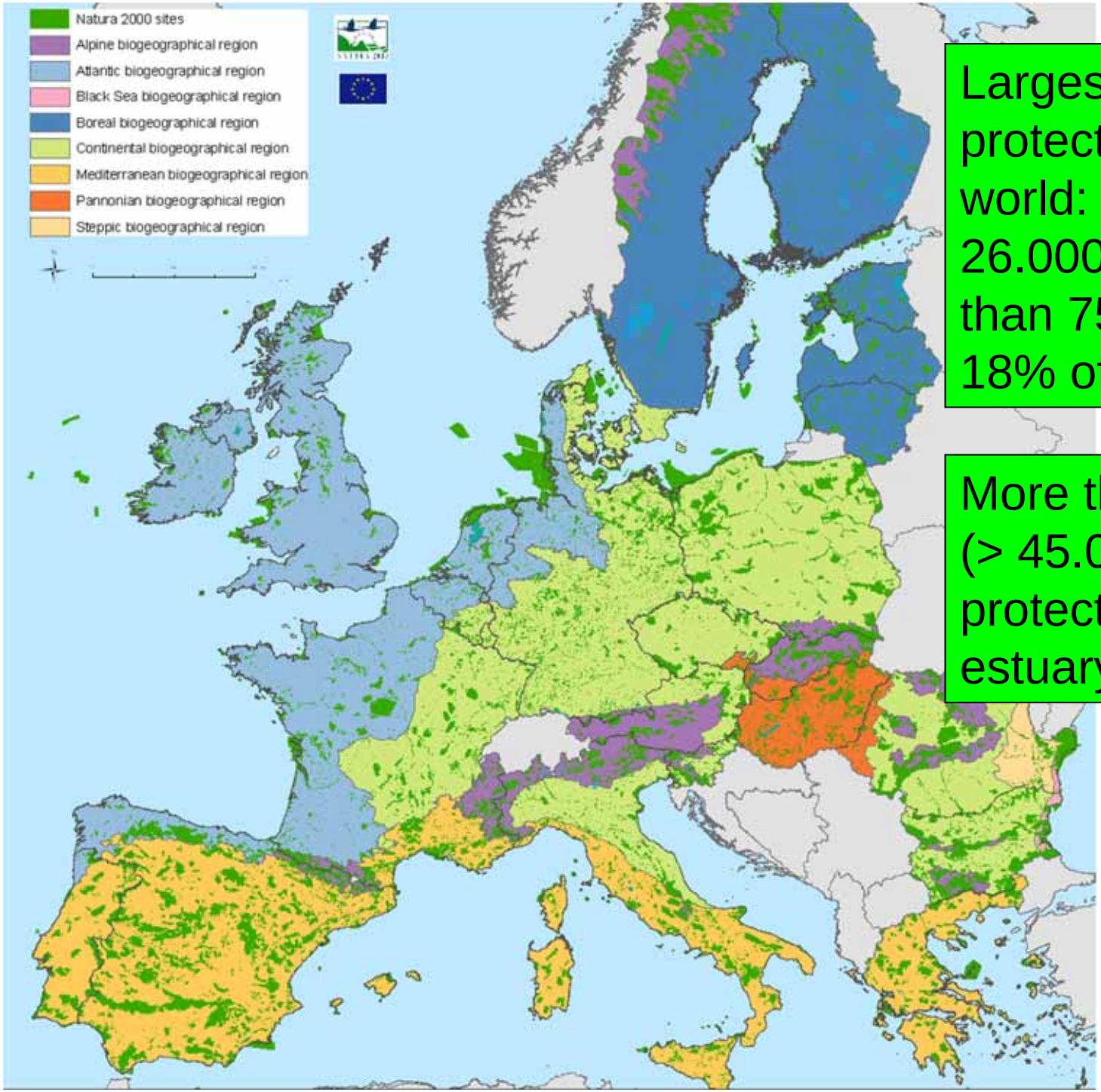
Environmental Impact Assessment (EIA) Directive (1985) and Strategic EIA Directive (2001);

Birds Directive (1979) and **Fauna-Flora-Habitat Directive** (1992), both resulting in the ***Natura 2000*** **network** of sites for biodiversity and nature conservation (based on scientific criteria; no deterioration: maintain or restore the "Favourable Conservation Status" of threatened species and habitats);

Water Framework Directive (2000) for water and river basin management (need to achieve "good ecological and chemical status" at all rivers, groundwater and coastal waters);

Flood Risk Directive (2007) to assess, manage and reduce the risks at rivers and coasts.

Marine Strategy Framewk. Dir (2008) incl. coast but not estuar.



Largest network of protected areas in the world:
26.000 sites of more than 750.000 km² = 18% of EU land area

More than 2200 sites (> 45.000 km²) are protected coastal and estuary habitats

EU Guidance on Birds and Habitat Dir. for Estuaries and Coastal Zones (2011)

„Estuaries and coastal zones are among the most productive ecosystems in the world, with both **high ecological and economic values**.

They are of prime importance for wildlife, especially migrating and breeding birds and of **major value** as nursery grounds **for commercially important fish**.

They offer a wide variety of **ecosystem services**: shoreline stabilization, nutrient regulation, carbon sequestration, detoxification of polluted waters and supply of food and energy resources *(Millennium Ecosystem Assessment, 2005*).

As a result they provide a wide range of **economic benefits** to many sectors, including fishermen, industrial complexes, tourism and recreation.

They are amongst the most dynamic and complex ecosystems in the world, made up of a wide range of **different habitats in an ever-changing mosaic structure**. E.g sand banks, mudflats and sand flats, salt marshes and at their coastal edge sand dunes, coastal lagoons, shallow inlets and bays, reefs, islets and small islands, sandy beaches, sea cliffs.

Most of these habitat types are protected under the Birds and Habitat Directives: overlap with WFD!“

EU Guidance on Birds and Habitat Dir. for Estuaries and Coastal Zones (2010)

Key recommendations

The design of plans or projects should always be based on **achieving dual goals of both Natura 2000 conservation and socio-economy** according to the 'working with nature' concept (*integrated planning*).

Damage prevention or avoidance measures should always be preferred to compensation measures.

Pre-assessments to evaluate the potential for impact of a plan or project on Natura 2000 sites should always be foreseen.

Thorough and timely **stakeholder consultation** is always recommended in order to prevent the raising of objections during the project permitting process.

In case of any **remaining minor scientific uncertainty** with regard to the effects of a project or the related mitigation or compensatory measures, there should be a **pre-defined and validated scheme to monitor the actual impacts and a framework to adapt** the mitigation and compensation measures to the actual impacts.

EU Water Framework Directive (WFD)

Key principles:

- Integrated management of water resources on the **basin-wide scale**, <u>including coastal waters</u>
- Taking into account and addressing all **pressures and impacts** (incl. information gaps)
- **Legal requirement** is to achieve by 2015 (2021/2027) the **environmental objectives** (*good water status/potential*)
- Basis: Comprehensive status reports (2005) and **River Basin Management Plans** incl. a **Programme of Measures** (2009; ev. 6 years) to achieve WFD objectives

From theory to reality

Law: Maintain and, where needed, restore existing water and nature to achieve the *good quality* status. Exemptions are possible but actually very difficult to justify.

The **European Commission** (arm of EU law) regularly assesses progress and the derogations chosen:

In case of non-compliance, it - regularly - takes governments, to the **European Court of Justice**.

E.g. in November 2012 the EC required the Austrian Government - after its loss of habitats and populations of a protected wetland bird in two sites - to set aside a new Natura2000 area: promptly!


Eurasian Curlew

Danube River Basin

- The most international river basin world-wide (19 countries).
- 2nd largest river basin in Europe: 801,463 km², 81 M people
- **Danube**: 2857 km (2415 km navigable), discharge: 6500 m³/s

Danube River Protection Convention

Since 1994 the legal frame for cooperation to assure the protection of water and ecological resources and their sustainable use in the Danube River Basin.

Joint platform: Intl. Commission for Protection of Danube Basin

Danube River Basin District: Overview

MAP 1

LEGEND

- *Danube River Basin District (DRBD)*
- *Danube River*
- *Tributaries (with catchment area > 4,000 km²)*
- *Lake water bodies (with surface area > 100 km²)*
- *Transitional water bodies*
- *Coastal water bodies*
- *Canals*
- *Competent authority*
- *National borders*

Cities:

- *100,000 - 250,000 inhabitants*
- *250,000 - 1,000,000 inhabitants*
- *> 1,000,000 inhabitants*

0 50 100 200 Kilometers

Scale: 1 : 4,500,000

(Scale 1: 6,000,000 in A4 landscape paper format)

www.icpdr.org

icpdr iksd

International Commission for the Protection of the Danube River

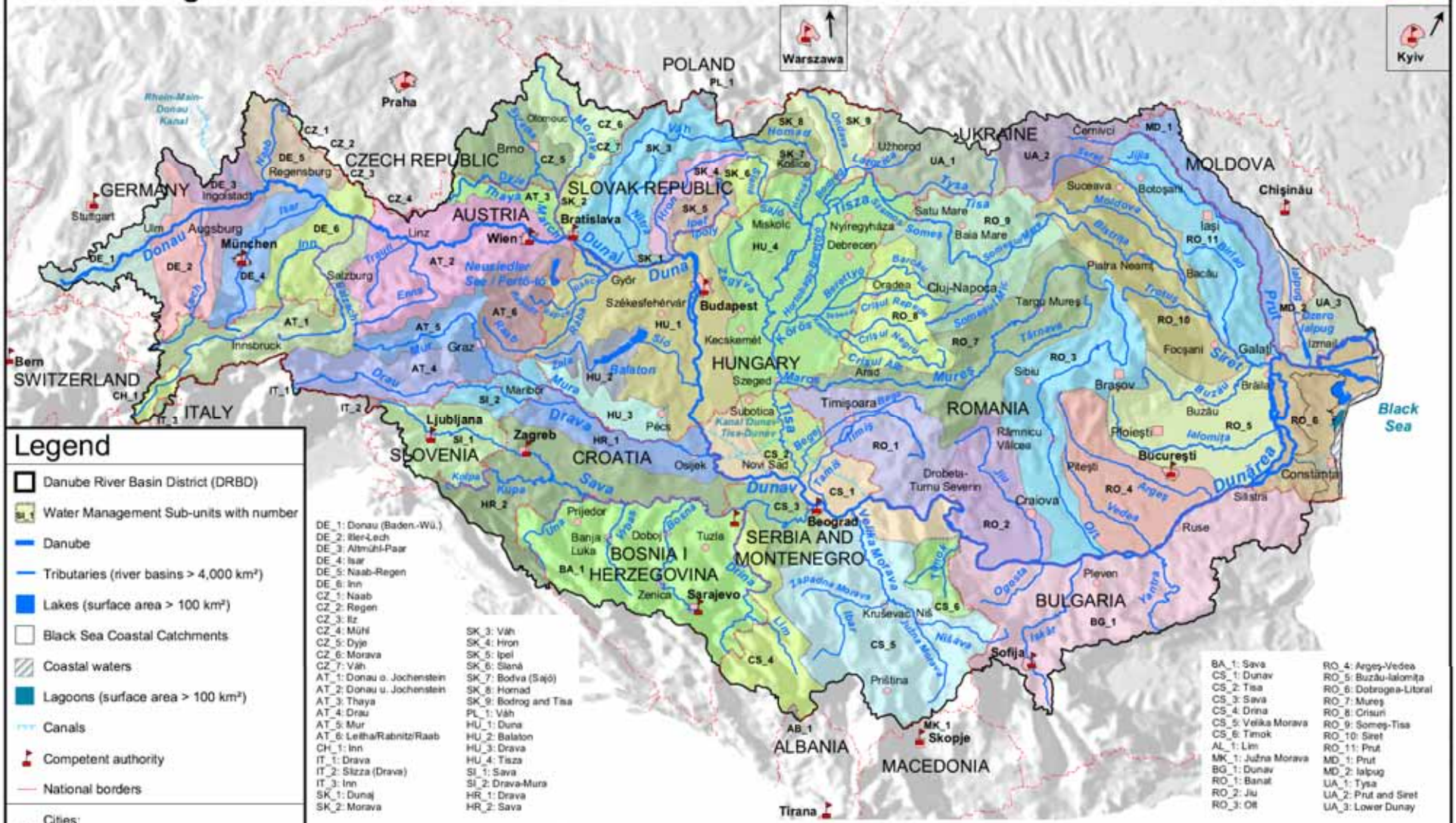
Internationale Kommission zum Schutz der Donau

This ICPDR product is based on national information provided by the Contracting Parties to the ICPDR (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

Danube River Basin District
Water Management Sub-units

Product of:
ICPDR (International Commission for the Protection of the Danube River), Vienna



Legend

- Danube River Basin District (DRBD)
- Water Management Sub-units with number
- Danube
- Tributaries (river basins > 4,000 km²)
- Lakes (surface area > 100 km²)
- Black Sea Coastal Catchments
- Coastal waters
- Lagoons (surface area > 100 km²)
- Canals
- Competent authority
- National borders

Cities:
- > 1,000,000 inhabitants
- 250,000 - 1,000,000 inhabitants
- 100,000 - 250,000 inhabitants

DE_1: Donau (Baden.-Wü.)
DE_2: Iller-Lech
DE_3: Altmühl-Paar
DE_4: Isar
DE_5: Naab-Regen
DE_6: Inn
CZ_1: Naab
CZ_2: Regen
CZ_3: Ilz
CZ_4: Mühl
CZ_5: Dyje
CZ_6: Morava
CZ_7: Váh
AT_1: Donau o. Jochenstein
AT_2: Donau u. Jochenstein
AT_3: Thaya
AT_4: Drau
AT_5: Mur
AT_6: Leitha/Rabnitz/Raab
CH_1: Inn
IT_1: Drava
IT_2: Slizza (Drava)
IT_3: Inn
SK_1: Dunaj
SK_2: Morava
SK_3: Váh
SK_4: Hron
SK_5: Ipel
SK_6: Slaná
SK_7: Bodva (Sajó)
SK_8: Hornad
SK_9: Bodrog and Tisa
PL_1: Váh
HU_1: Duna
HU_2: Balaton
HU_3: Drava
HU_4: Tisza
SI_1: Sava
SI_2: Drava-Mura
HR_1: Drava
HR_2: Sava

BA_1: Sava
CS_1: Dunav
CS_2: Tisa
CS_3: Sava
CS_4: Drina
CS_5: Velika Morava
CS_6: Timok
AL_1: Lim
MK_1: Južna Morava
BG_1: Dunav
RO_1: Banat
RO_2: Jiu
RO_3: Olt
RO_4: Argeş-Vedea
RO_5: Buzău-Ialomiţa
RO_6: Dobrogea-Litoral
RO_7: Mureş
RO_8: Crisuri
RO_9: Someş-Tisa
RO_10: Siret
RO_11: Prut
MD_1: Prut
MD_2: Ialpug
UA_1: Tysa
UA_2: Prut and Siret
UA_3: Lower Dunay

0 50 100 150 200 250 Kilometers

Scale: 1 : 4,500,000

(Scale 1: 6 mill in A4 landscape paper format)

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Prepared by FLUVIUS, Vienna, December 2005 *(Draft 2)*

Human activities damaged the Danube region waters

International Danube Basin Plan (WFD)

Organic Pollution

Nutrient Pollution

Hazardous Substances Pollution

Hydromorphological Alterations

⇨ Plus: Transboundary GW bodies of basin-wide importance

Hydromorphological Alterations

River and Habitat Continuity Interruption (*dams*)

Disconnection of Adjacent Floodplains (*dikes*)

Hydrological Alterations (*diversion; peak operation*)

Future Infrastructure Projects

Key Drivers: Navigation, Hydropower**,** Flood Protection, Water Supply

Pros and Cons

"Ecology" includes the quality status of

- ✓ Hydromorphology (water dynamics, sediments)
- ✓ Fish
- ✓ Zoobenthos (water insects) and
- ✓ Phytoplankton.

EU-wide assessment 2012 of WFD implementation

Impressive improvement of knowledge and action

But also delays, low ambition and incorrect interpretation

Need of re-balancing the country plans and actions

EC Water Blueprint (Nov. 2012): country-specific enforcement

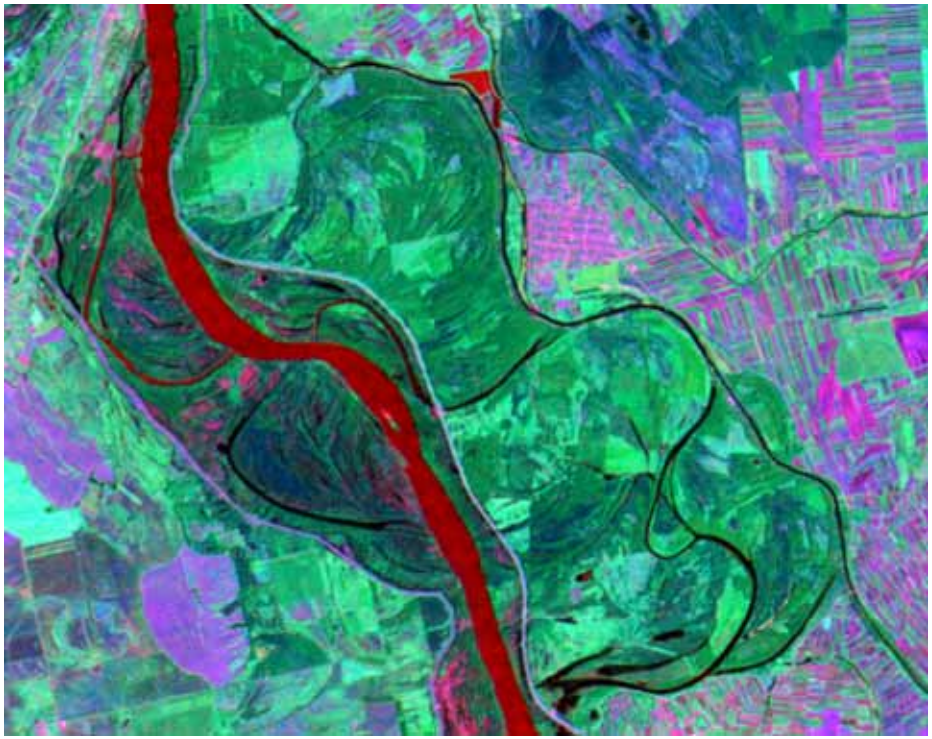
Objective: **Restore longitudinal and habitat continuity interruptions**

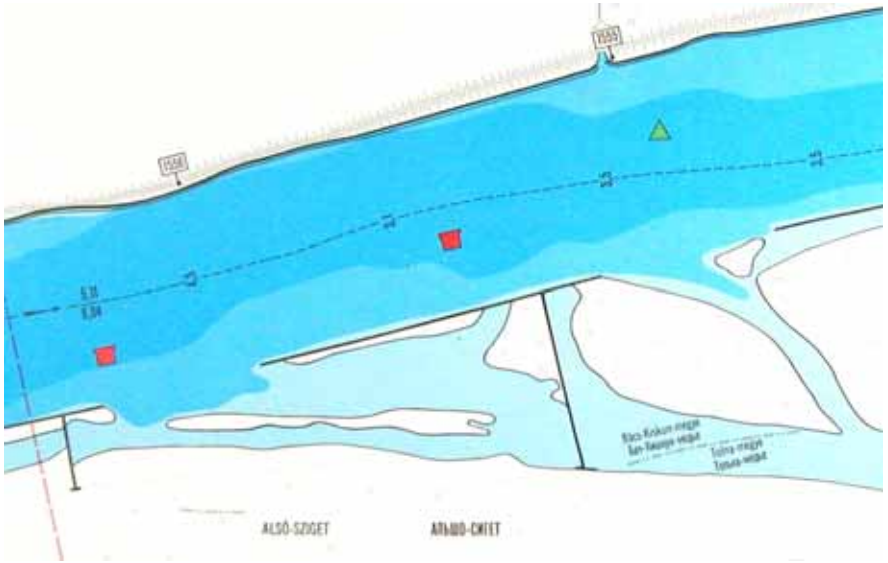
Basic concept:

1. Reference conditions (prevention of new dams and obstacles)
2. Near-natural bypass channels
3. Technical bypass
4. Artificial migration facilities

Objective: **Restore lateral connectivity interruptions**

Example 1: Wetland disconnection
(red colour shows flooding water)

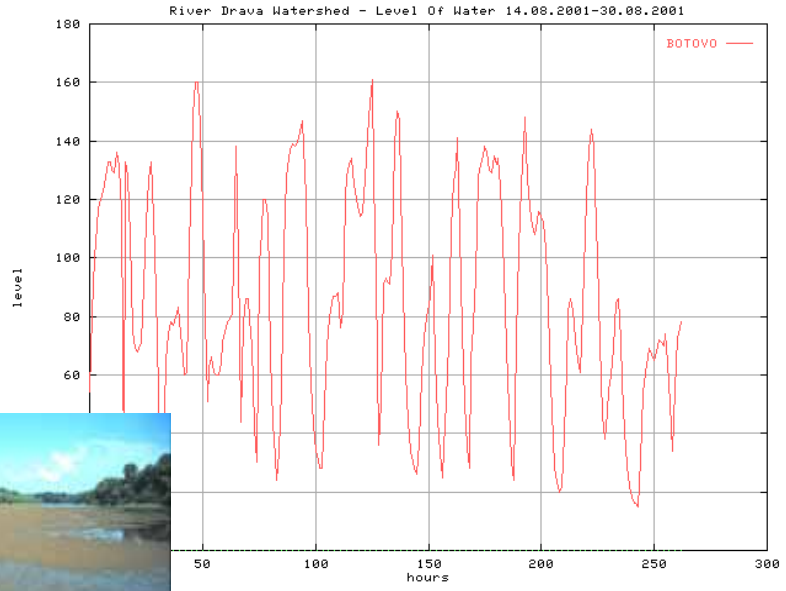




Example 2: Major side-channel interruption by groynes and river engineering

Heavily modified water bodies: **Achieve "good ecological potential" e.g. for hydrological alterations**

Example 1: Large impoundments disturbe the discharge regime during low flow and frequent floods



Example 2: Hydro peaking (>50 cm above and below the natural water level)