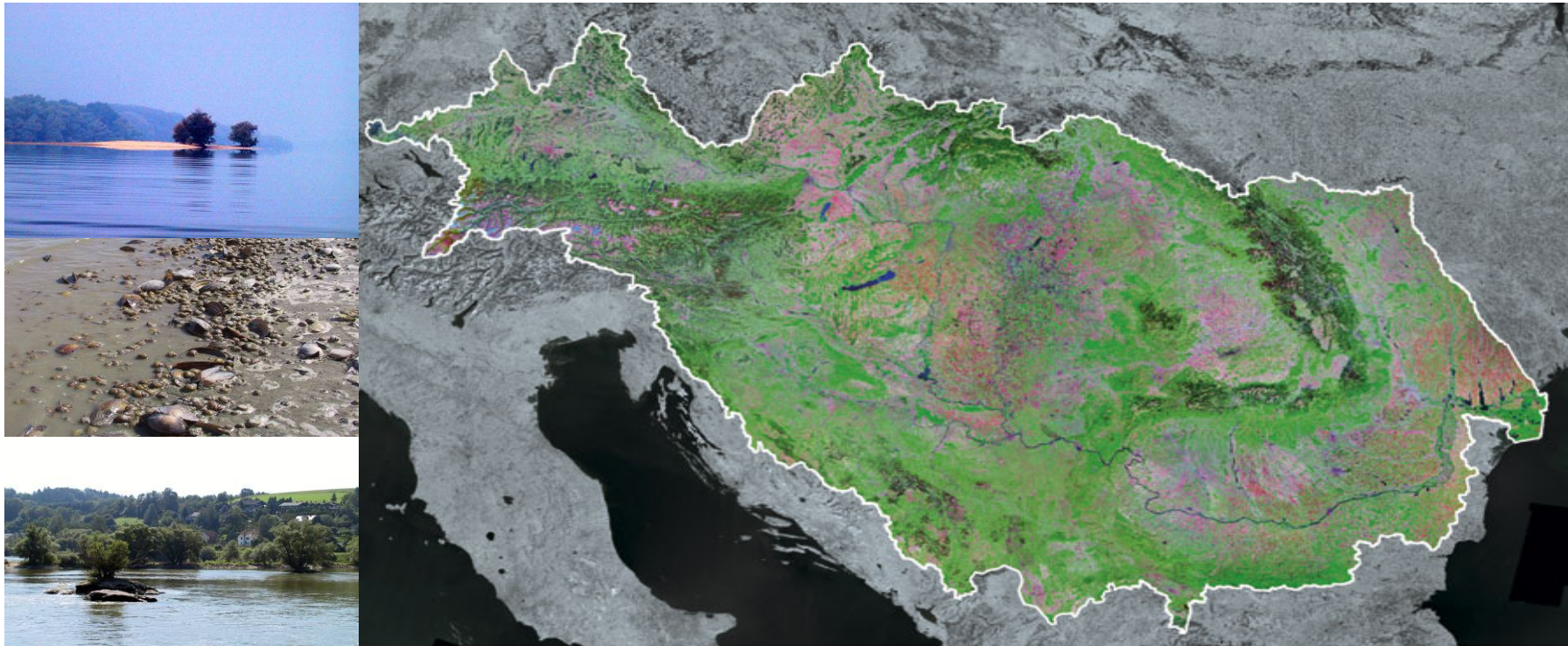


Hydromorphological Alterations

icpdr iksd

International
Commission
for the Protection
of the Danube River
Internationale
Kommission
zum Schutz
der Donau

Danube River Basin Management Plan



2nd ICPDR Stakeholder Forum

29 – 30 June 2009

Bratislava (SK)

Birgit Vogel

ICPDR Secretariat

Content



- ⇒ Introduction on Hydromorphological Alterations
- ⇒ HYMO alterations in the European context
- ⇒ HYMO alterations in the DRB
 - ⇒ Key results of the DRB Plan



What are HYMO Alterations?



HYMO Alterations are human pressures to the natural structure of surface waters such as modification of bank structures, sediment/habitat composition, discharge regime, gradient and slope.

The consequence of these pressures can impact aquatic ecological fauna and flora and can hence significantly impact the water status

Natural



Driver/Pressure

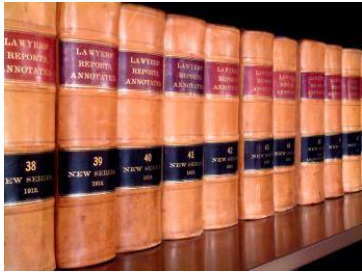


HYMO alteration



Which Driver - Which Pressures?

DRIVER	Hydropower Generation	Flood Defence	Navigation
POSSIBLE PRESSURES	River & habitat continuity interruption Alteration of sediment transport	Wetland reconnection Wetland reduction	Bed stabilisation Deepening river bed Sidearm disconnection
<i>Overlapping Pressures</i>			
River & habitat continuity interruption Wetland/floodplain disconnection Bank reinforcement Alteration of river course and channelform/profile Alteration of hydraulic/hydrological characteristics			



EU WFD



Article 5 Reports 2004 according to the WFD

- ⇒ **Hydromorphological alterations** have been identified as significant water management issues all over Europe
- ⇒ **Heavily Modified Water Bodies** have been designated on a provisional basis in high percentage

**HYMO alterations in focus of RBM Plans 2009
besides 'traditional' pollution parameters**

DRBM Plan & HYMO Alterations



⇒ Hydromorphological alterations clearly identified as significant pressures

⇒ Basis for the analysis and findings on HYMO alterations in the DRBM Plan

HYMO alterations as Significant Water Management Issue



Four HYMO components



Hydromorphological
Alterations

River and Habitat Continuity Interruption

Disconnection of Adjacent Wetlands/Floodplains

Hydrological Alterations

Future Infrastructure Projects

Hydromorphological Alterations

Drivers

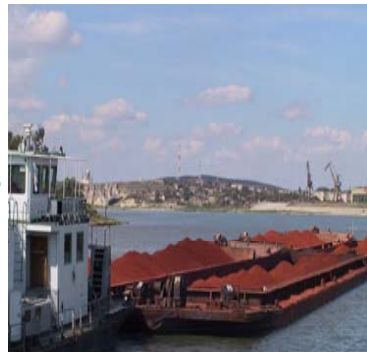
Key Drivers

Hydropower generation

Navigation

Flood defence

Water supply



Other Drivers

Recreation

Urban planning

Agriculture

HYMO Alterations

icpdr iksd

International
Commission
for the Protection
of the Danube River

Internationale
Kommission
zum Schutz
der Donau

DRBM Plan

Key Results



Hydromorphological
Alterations

HYMO Alterations

Visions & Management Objectives



River and Habitat Continuity Interruption

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.

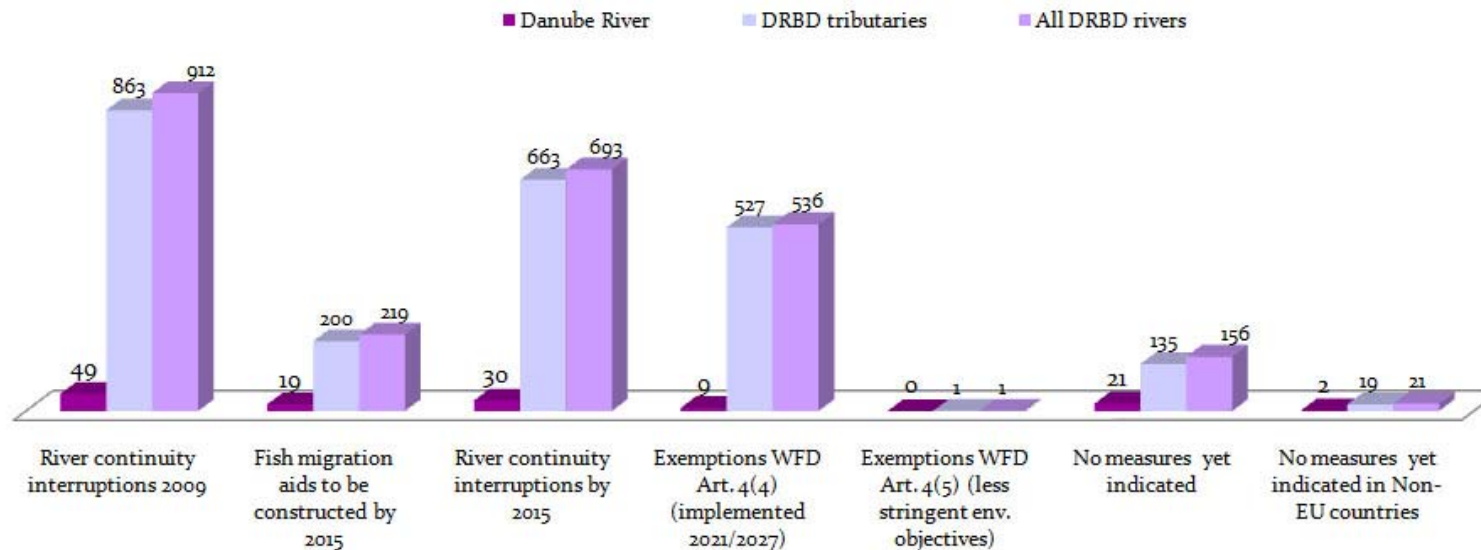


Hydromorphological Alterations

River and Habitat Continuity Interruption

icpdr iksd

International Commission for the Protection of the Danube River
Internationale Kommission zum Schutz der Donau



- 219 barriers passable for fish; 693 remain continuity interruptions in 2015
- Remaining continuity interruptions will be addressed by 2021/2027
- Achieve the WFD environmental objectives in an ecologically effective way: initial measures should focus on the defined ecological priority river stretches.
- Perform feasibility study on the re-opening of the Iron Gate Dams

River and habitat continuity interruptions 2015 (expected improvements)

Extracted Zoomed Map Version





Hydromorphological
Alterations

Ecological prioritisation approach for basin-wide measures for river continuity



- ⇒ Should ensure free fish migration in DRB
- ⇒ Classification of fish regions in DRB
- ⇒ List and map of key migration routes of medium and long distance migratory fish species
- ⇒ Develop prioritisation index for measures based on agreed criteria
- ⇒ Map illustrating prioritisation index and therefore measure priority



Sturgeon



Danube Salmon

Danube River Basin District: Ecological prioritisation regarding restoration measures for river and habitat continuity on the basin-wide scale

The map at this stage indicates the ecological prioritisation of existing barriers, irrespective if the river and habitat continuity is already restored or not.

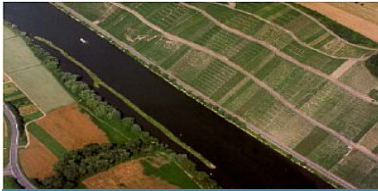
**Working map
status on 10 May 2009**

No data provided : BG, MD

This draft map is part of the draft Danube River Basin Management Plan (May 2009) and might be revised after the public consultation process on DRBM Plan



Free migration in the Danube River and the direct connection of tributaries = a priority

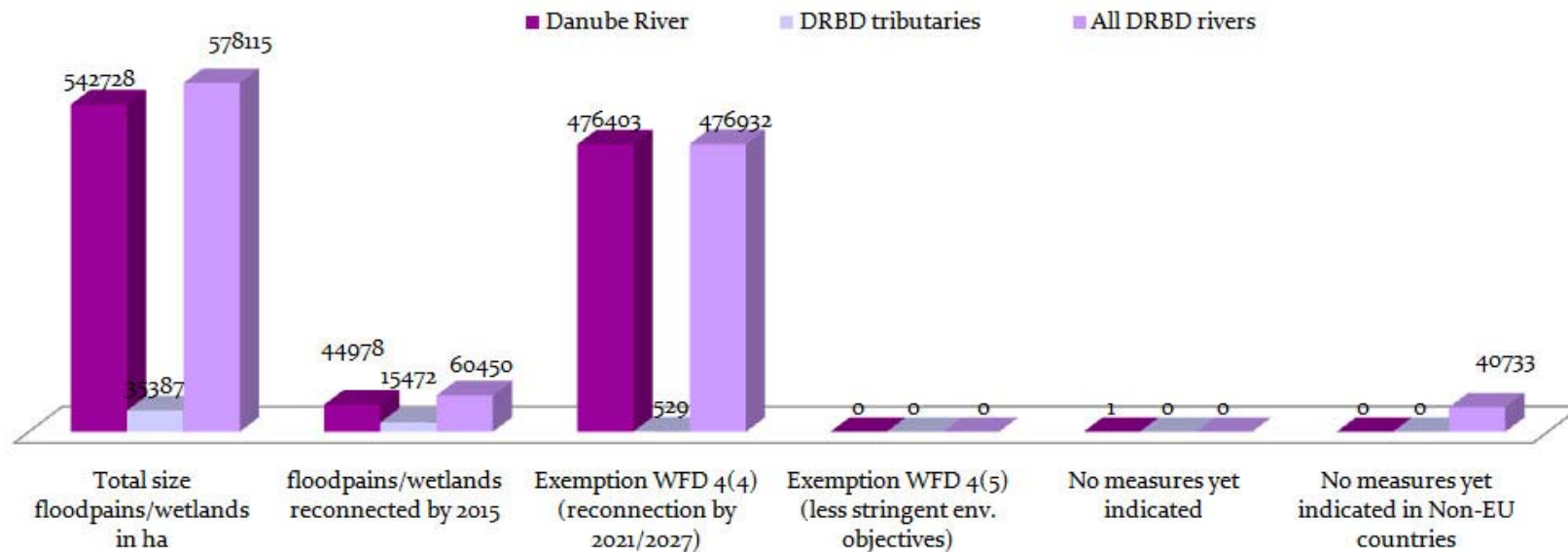


Hydromorphological Alterations

Disconnection Wetlands/Floodplains

icpdr iksd

International Commission for the Protection of the Danube River
Internationale Kommission zum Schutz der Donau

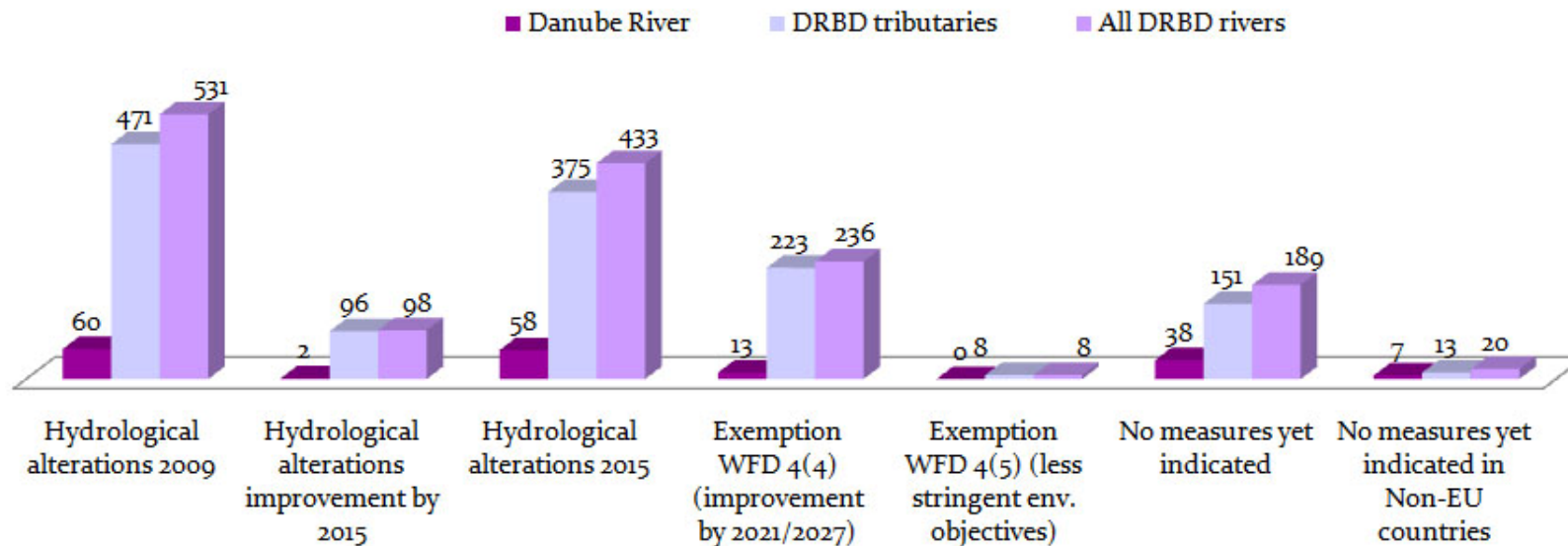


- 578,115 ha of wetlands/floodplains with reconnection potential
- 60,450 ha reconnected and/or the hydrological regime improved by 2015
- Difficult to indicate currently the effect of measures on basin-wide scale

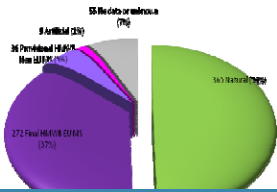


Hydromorphological Alterations

Hydrological Alterations



- Measures will be taken to improve the ecological status of water bodies impacted by significant hydrological alterations on the basin-wide scale
- Remaining hydrological alterations will be addressed by 2021/2027
- Difficult to indicate currently the effect of measures on basin-wide scale



HMWB

Preliminary Results: HMWB – Joint approach Danube

icpdr iksd

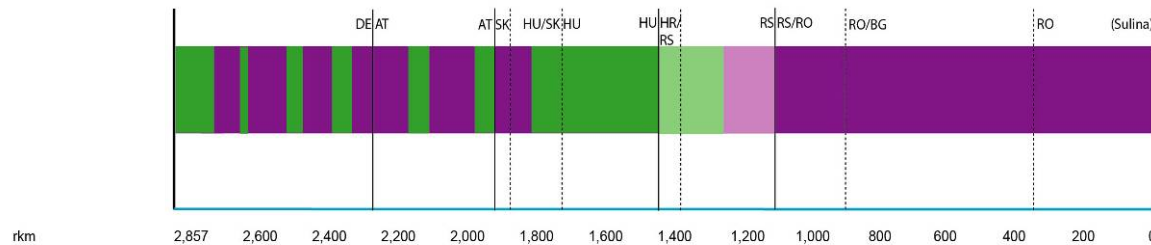
International
Commission
for the Protection
of the Danube River

Internationale
Kommission
zum Schutz
der Donau

Clear criteria for the final/provisional (Non EU MS) HMWB designation
A water body had to

- ⇒ be *significantly physically altered* – leading to change of character
- ⇒ fail *‘the good ecological status’*

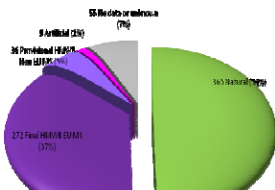
The exercise was performed jointly in the frame of the HYMO TG



Final HMWB designation EU Member States:
 ■ HMWB
 ■ Natural
 Provisional HMWB designation Non EU Member States:
 ■ HMWB
 ■ Natural

Danube River	
N° WBs	N° HMWB
61	32 (52%)
km WBs	km HMWB
2,857	1,559* (55%)

* Without RO – will be supplemented by end 2009



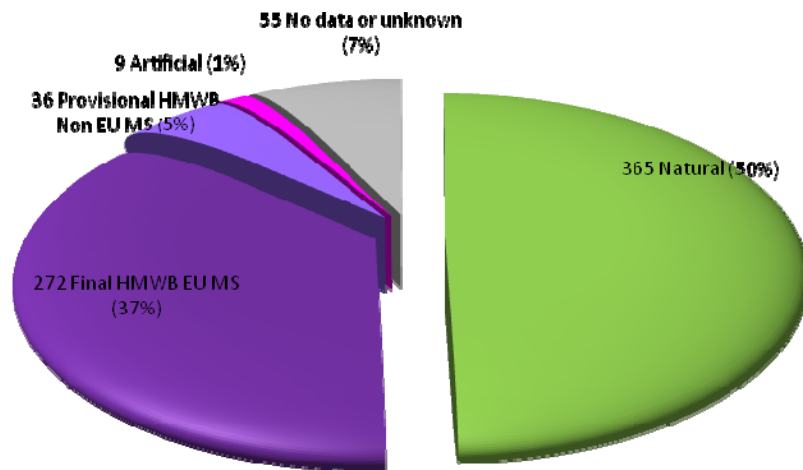
HMWB

Preliminary Results: HMWB / Artificial WBs All DRBD Rivers

icpdr iksd

International
Commission
for the Protection
of the Danube River

Internationale
Kommission
zum Schutz
der Donau



All DRBD rivers	
N° WBs	N° HMWB
728	308 ¹ (42%)
km WBs	km HMWB
20,882	7,638 ² (37%)

⇒ Data gaps still exist

⇒ Update/revision during second half of 2009 for final Plan

¹ Without RO – will be supplemented by end 2009

² 29 provisional HMWB (Non EU MS)



Hydromorphological
Alterations

Future Infrastructure Projects



- ⇒ Future Infrastructure Projects can impact and deteriorate the water status
- ⇒ 115 Future Infrastructure Projects reported
- ⇒ 19 of them in Danube River
- ⇒ 49% dedicated to navigation; 43% to flood protection
- ⇒ Rest: hydropower generation, water supply and other purposes
- ⇒ 18 projects are subject to WFD Article 4(7) in EU MS
- ⇒ 32 FIPs in Non EU MS





Hydromorphological
Alterations

How to prevent deterioration through FIPs in future?



- ⇒ Ensure **integrated planning** approaches (economic development – FIP implementation and achievement of environmental objectives)
- ⇒ *Example: Joint Statement for navigation and environment*
- ⇒ Application of **best practices** and **best available techniques**
- ⇒ Performance of **sound SEAs and EIAs**



YOUR STAKE COUNTS - PARTICIPATE!

www.icpdr.org/participate

