

“Sediment Management – an essential element of River Basin Management Plans”

**Report from the SedNet Round Table Discussion
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SedNet Partners

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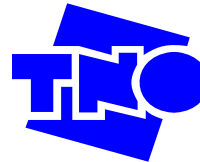
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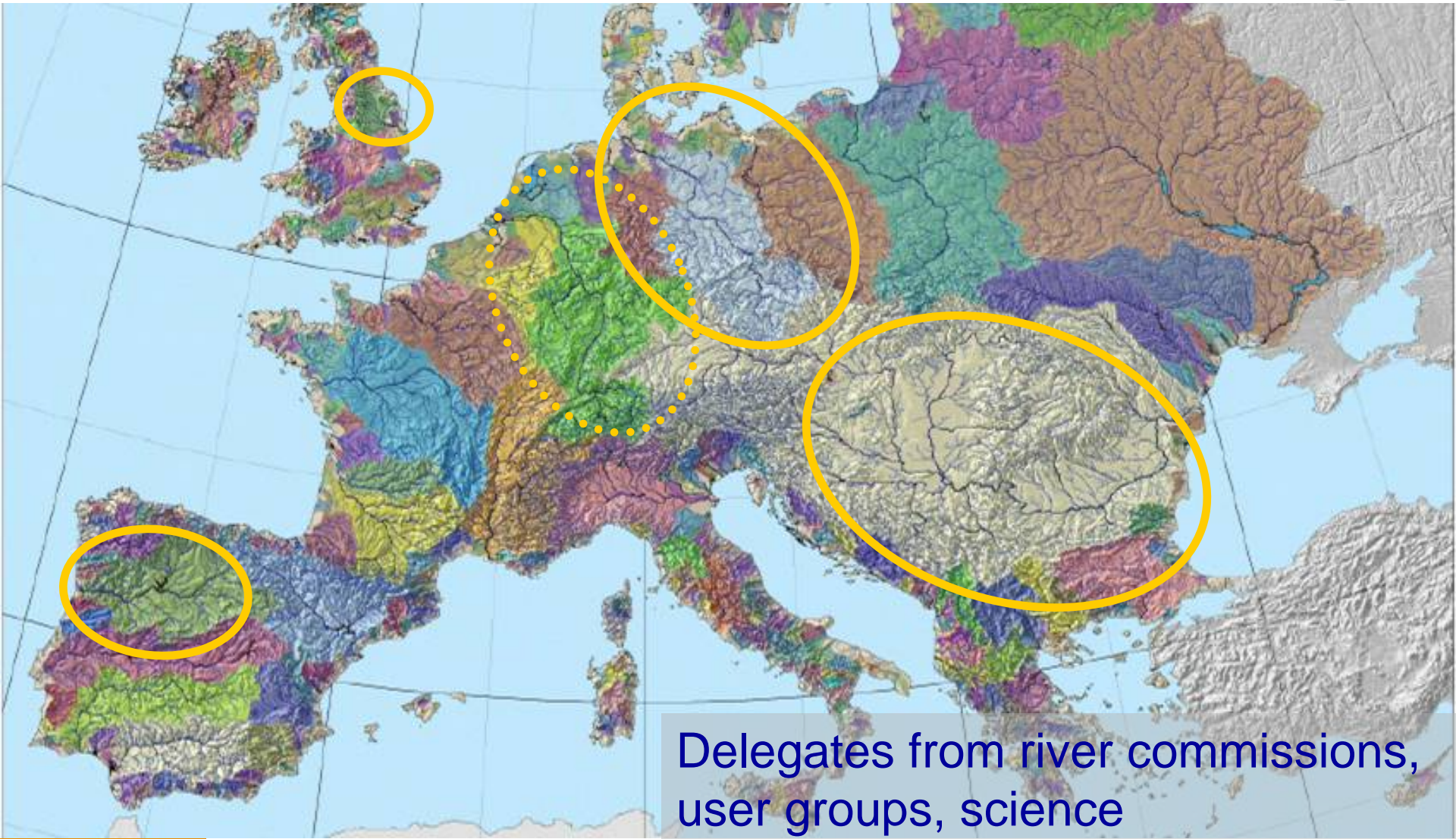


Round Table Objective

- WFD River Basin Management Plans (RBMP) in 2009.
 - Sediment management (quality and quantity) should become a part of these plans, which will mean that scientific and practical guidance is needed how to consider sediment management issues.
- ➔ Recommendations for sediment management based on experiences taking into account legal requirements, needs of users and scientific advice.



Round Table River Basins



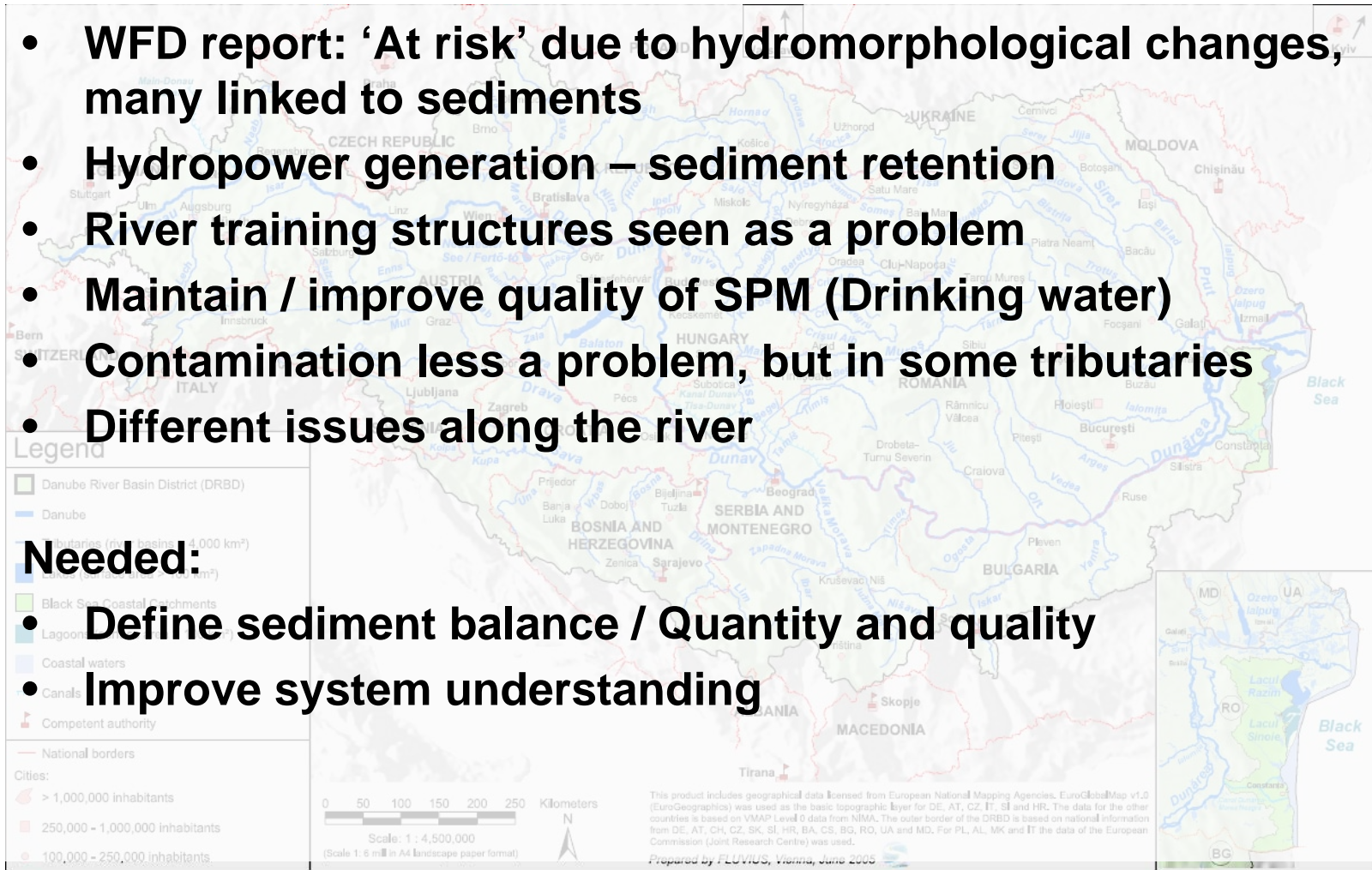
Delegates from river commissions,
user groups, science

The Danube

- WFD report: 'At risk' due to hydromorphological changes, many linked to sediments
- Hydropower generation – sediment retention
- River training structures seen as a problem
- Maintain / improve quality of SPM (Drinking water)
- Contamination less a problem, but in some tributaries
- Different issues along the river

Needed:

- Define sediment balance / Quantity and quality
- Improve system understanding



The Douro



- Sediments mostly sand and gravel
- 39 multipurpose dams
- Accumulation of sediment in reservoirs
- Flood control only up to medium floods; no control of extreme floods; then material is flushed downstream
- Sand / gravel extraction (2 Mio. tonnes/year)
- Some dredging in the estuary in Porto
- Sediment contamination needs to be addressed

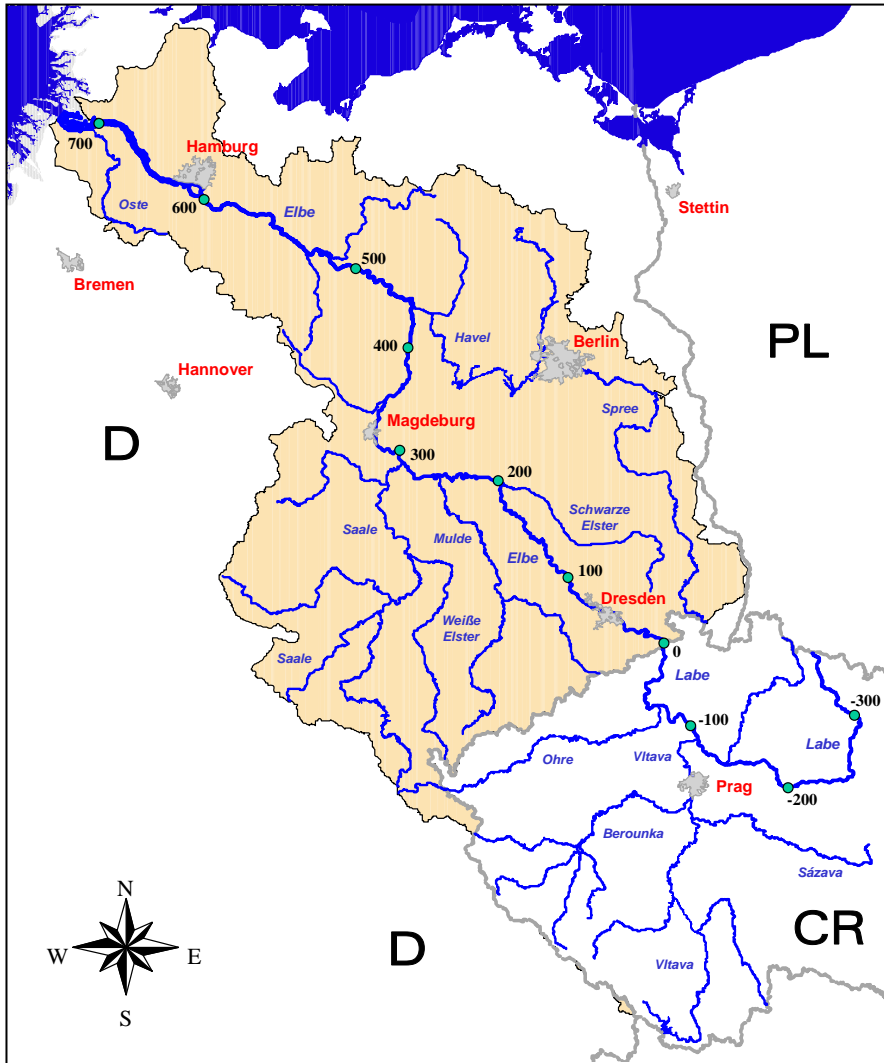
The Douro / Statements

- Sediment deficiency in the river system worsens erosion at the coast.
- The extraction of sand and gravel has a negative impact on the morphology of the river bed.
- Sediment quality is not a priority with regard to sediment management and water quality in the Douro but needs to be addressed.
- There are a number of current management plans which partly address sediment issues but which are regionally based.

A sediment management plan (quality, quantity, water, soil, land use) is needed; institutional cooperation will be necessary.



The Elbe



WFD Art. 5 report /
Germany:

2/3 „at risk“ due to
hydromorphological
changes and
contamination

The Elbe / Interests & challenges

- Necessary maintenance of inland waterways
- Dioxin contamination of floodplains resulting in exceedance of feed and food standards
- Sediment management in the Port of Hamburg
 - Relocation and North Sea disposal
 - Dredged Material disposal on land
- Estuary management for navigation, flood protection, nature conservation, tourism, fishery to be developed



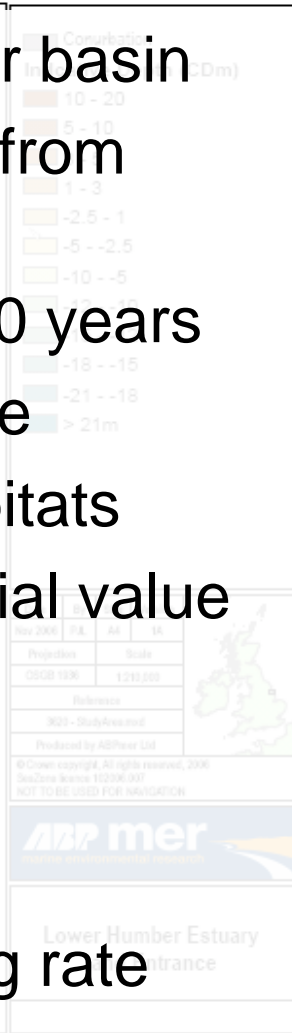
Sediment quality

- Contamination is a problem for the river and the sea and can only be solved on river basin scale
- 3-step strategy, taking into account all interests and uses:
 - Substances of concern
 - Areas of concern
 - Areas of risk
- Prioritisation and adapted remediation
- Costs for remediation have to be shared on supra level
- Transition concepts are necessary



The Humber

- The largest and best monitored English river basin
- WFD report: 100 % of TraC waters “at risk” from morphological pressures
- Land reclamation from the estuary since 400 years
- Long-term sustainable plan for flood defence
- Nearly all of the estuary are designated habitats
- Important port facilities – economic and social value
- Intensive shipping in the estuary
- Dredging is necessary (~ 7 Mio. m³ p.a.)
- Most sediment comes from the sea
- Contamination of sediments with decreasing rate



The Humber / Results

- Consider constant changes in estuaries
- Sediment management is a clear need
- Look at issues on broader scale and seek for win-win solutions
- WFD risk assessment is too blunt; good system understanding is necessary to identify real issues
- Habitats + WFD requirements - Sediments as part of a healthy ecosystem
- Good communication is necessary
- Maintenance dredging protocol for dredging under Birds and Habitats Directive; support from ports and NGOs



Conclusions

- Sediment Management is an issue in all 5 river basins (together with the Rhine).
- Each river basin has specific natural characteristics, uses, history, challenges.
- Estuaries are different from rivers; until now thinking is very 'fluvial'. Differences expected for e.g.:
 - Time scales
 - Effectiveness of measures
 - Close linking of sediment management to environmental / climate change issues



Conclusions

- Integration of requirements of different European and national pieces of legislation can be challenging.
- EU Policies may create conflicting ambitions.
- Good ecological status requires proper attention to sediment issues.
- Sediment EQS values should be regarded as high level screening values.
- Sediment quantity and quality issues are closely interrelated and can not be separated



Recommendations

- Collate available data to identify knowledge gaps and enhance understanding.
- To develop River Basin Sediment Management make use of
 - existing methodology and information
 - existing guidance
- Draw on other river's experiences.
- EU should not only support problem identification, but also problem solving processes.





Thank you for your attention



... and have a look at www.SedNet.org



WFD Surface Water	WFD Groundwater
Not at risk of failing the WFD objectives: 12 % Possibly at risk of failing the WFD objectives: 25 % At risk of failing the WFD objectives: 23 %	Not at risk of failing the WFD objectives: 44% At risk / possibly at risk of failing the WFD objectives: 56 %

- Morphological and hydromorphological changes
- Diffuse sources of nutrients and pollutants
- Point sources of nutrients and pollutants
- Groundwater: diffuse nitrogen from agriculture, point sources, e.g. contaminated sites, mining, etc.



The Commission Regulation No 466/2001 of 8 March 2001 sets maximum levels for foodstuffs, e.g., heavy metals and dioxins. Moreover, the European Union developed a concept to minimize the contamination of feed and foodstuffs with dioxins and furans.

The dioxin levels in feed and food measured in Lower Saxony (*and presumably at other floodplain sites*) after the Elbe flood of 2002, were sometimes significantly above the fixed maxima.

Requirements on the side of the EU Commission:

- Financial support for adaptation of agricultural management
- Financial assistance for reorganization of farm enterprises
- Moderation of the regulations for a transitional period

The bedload management of WSD Ost serves the restoration and maintenance of the navigable depth of the fairway in the River Elbe using two basic methods: (1) bedload relocation (dredging) and (2) artificial bedload supply. Artificial bedload supply is practised in the Elbe reach between river-km 120 and 230, where excessive erosion prevails, by regular dumping of borrow materials from gravel pits.

The bedload-management practice in the River Elbe follows the guidelines of the Directive for Management of Dredged Material in Inland Waters of the Waterways and Shipping Administration (HABAB-WSV). Since the relocated material consists only of coarse sediment fractions, there are no contaminants adsorbed.

River Board Representative (extract)

- Polluter-pays approach, especially for nutrient emissions
- Contaminant transport with sediments primary attention
- Handling of chemical pollution on the river basin scale
- Costs of problem solutions, possibly from a joint fund

Scientific advice (economy): (1) organization of joint fund, (2) shared-burden approach for special problem areas?

User group “agriculture“, request from EU Commission:

- Financial support for adaptation of agricultural management
- Moderation of the regulations for a transitional period

Scientific advice: (1) PCDD/F analyses, (2) soil/animal transfer, (3) “floodplains” (input/output balance, remediation)

Discussion: Decision making, threshold values, additional weight of evidence

- Is the site erosive or depositional? Will management options change that, with risks to downstream sites?
- Complexity of sediment transport processes and associated uncertainties is usually fostering the application of the precautionary principle, i.e. removal as expensive solution
- Possible major improvement could be through incorporating multiple lines of evidence around probabilities (rare events!)
- Joint function of many river ports within the “catchment-coast continuum” as sediment traps but increasingly as sources for relatively cheap sea disposal. What is the yardstick for both?
- Weight of evidence for risks on downstream target areas from the precision of the term “indications that resuspension occurred”, e.g., from sediment cores, indicator substances ...