

Sediment management: a european perspective

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Content

- ▶ Background of Dutch-German exchange (DGE plus)
- ▶ What is needed for adequate sediment management ?
- ▶ Examples of sediment management
- ▶ Sediment management part of a more holistic approach



DGE: Exchange on sediment/ dredged material management

- ▶ since 1999: informal bilateral platform
- ▶ regulatory authorities from:
 - ▶ Netherlands
 - ▶ Germany
 - ▶ United Kingdom (since 2005)
 - ▶ France (since 2005)
 - ▶ Belgium (since 2006)



What have DGE/DGE^{plus} members in common ?

- Big and/or common river systems (Rhine, Meuse, Ems, Scheldt, Seine, Thames, Humber);
- An adjacent coastal area/North Sea;
- Important (sea) ports in which considerable amounts of sediment are moving (settling, resuspending) permanently;
- A need for dredging (maintenance, construction works, sand and gravel extraction, remediation of hot spots) of up to **50 million m³/year**.



Adequate sediment management = understanding the system

- ▶ Sediment is a connecting matrix
- ▶ Effects of sediment in the system
 - ▶ Quantitatively (for morphology, shipping, **ecology** ...)



Realignment project Chowderness



Sediments should be kept in the system!

- ▶ Subtidal placement of fine material
- ▶ Water column recharge



Adequate sediment management = understanding the system

- ▶ Sediment is a connecting matrix
- ▶ Effects of sediment in the system
 - ▶ Quantitatively (for morphology, shipping, ecology ...)
 - ▶ Qualitatively: sediment **contamination**



Contaminated sediments a problem ?

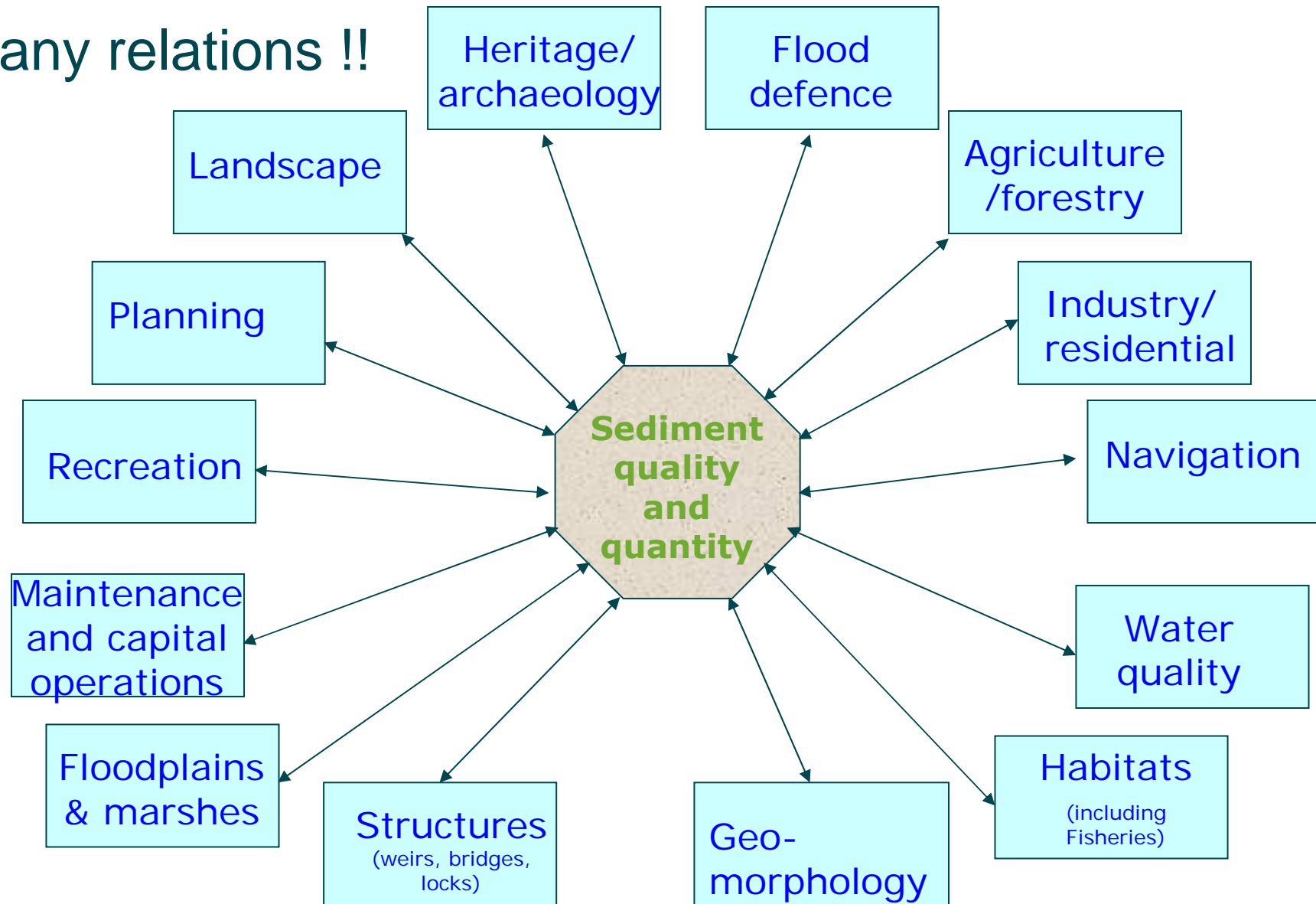


Adequate sediment management = understanding the system

- ▶ Sediment is a connecting matrix
- ▶ Role / effects of sediment in the system
 - ▶ Quantitatively (for shipping, ecology ...)
 - ▶ Qualitatively
- ▶ Scale of necessary measures
- ▶ Effectiveness
- ▶ Understanding the relations ...



Many relations !!



Adequate sediment management = adequate legislation

- ▶ On EU level:
 - ▶ Water Framework Directive
 - ▶ Groundwater daughter directive
 - ▶ EU Waste Directive
 - ▶ Soil Strategy / Soil Framework Directive



Adequate sediment management = adequate legislation

- ▶ On National level
 - ▶ Integrated approach for sediment management & handling of DM
 - ▶ Spatial planning
 - ▶ Rules for relocation within the system
- ▶ Matching with
 - ▶ Food quality legislation
 - ▶ Marine Strategy

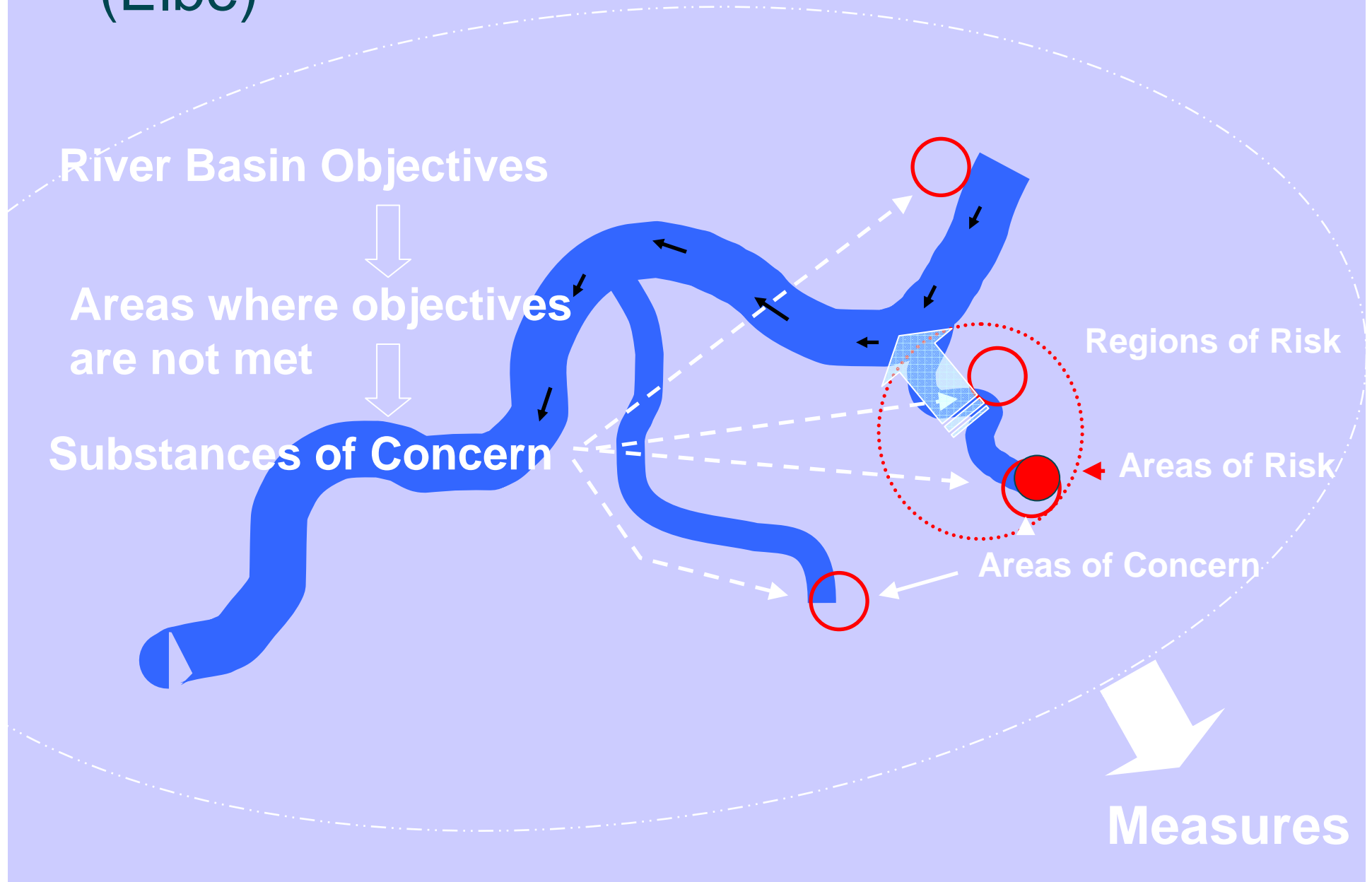


Adequate sediment management = adequate tools

- ▶ Water system modelling
 - ▶ Sedimentation
 - ▶ GIS for sediment quality
- ▶ Risk assessment tools (water system level vs site-specific)
- ▶ Diagnostic tools
- ▶ Tools for decision making
 - ▶ Cost-benefit analysis
 - ▶ Re-use options depending on sediment characteristics
- ▶ etc



The 'areas of risk characterization' approach (Elbe)



Adequate sediment management = looking for innovative concepts for re-use

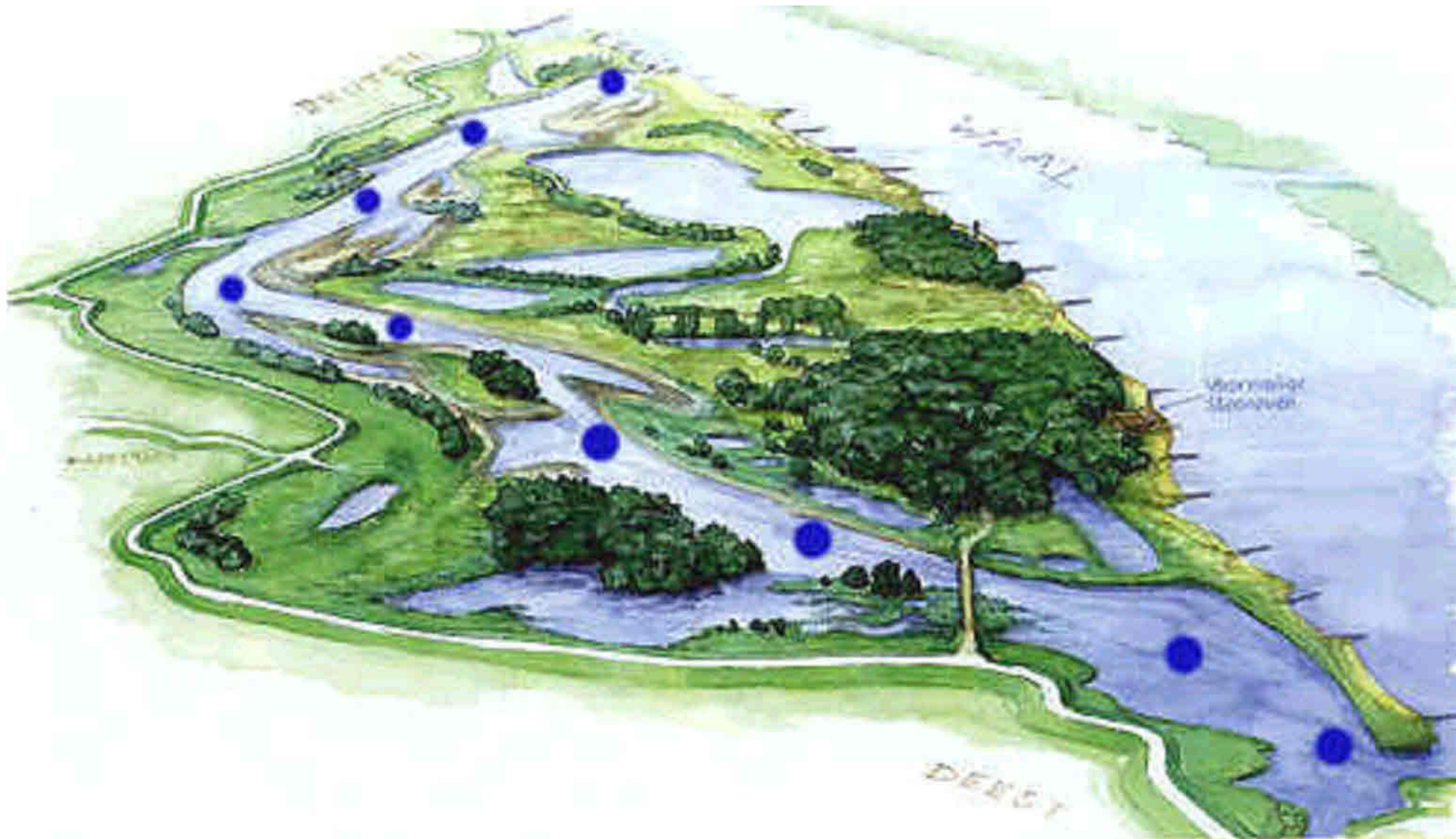


Belgium: solutions for the Fasiver pollution through stakeholder involvement

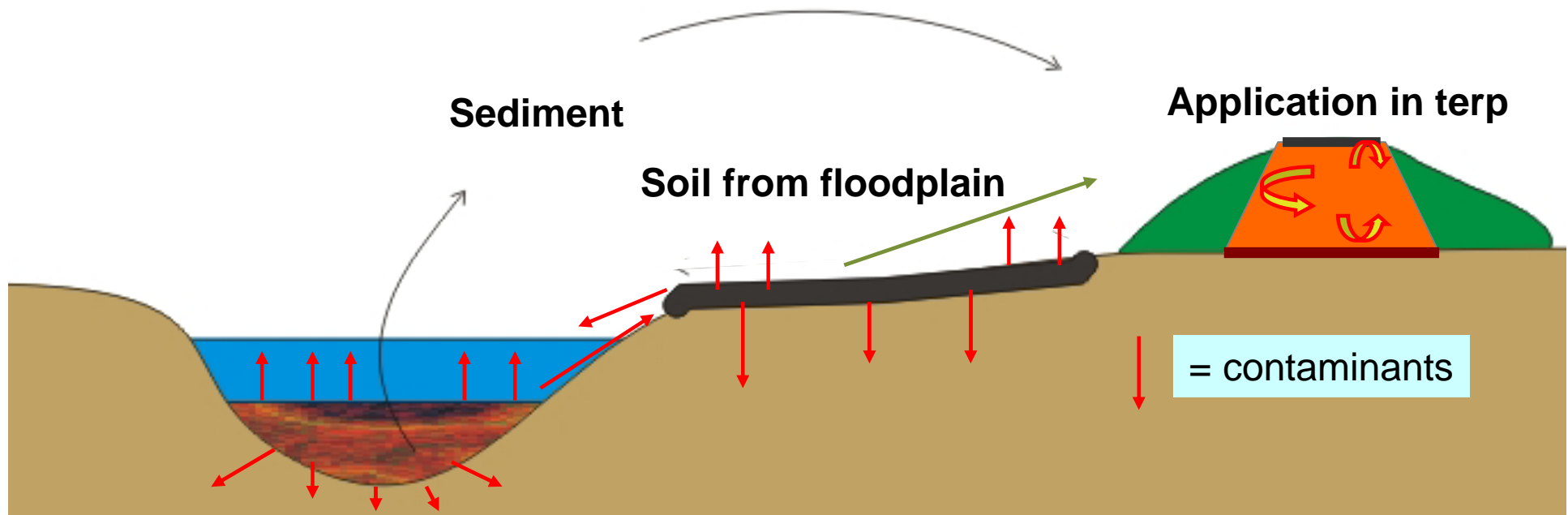
- ▶ Contaminated site turned into a treatment site for dredged material
- ▶ Dewatered and treated dredged material used to raise the level of the site to make it ready for building
- ▶ Soil and groundwater contamination cleaned up
- ▶ Site available again for industrial initiatives
- ▶ Achieved through a Public Private Partnership



Protection against dike burst / flooding: space for water in Rhine/Meuse



Risk reduction: contaminants in confinement within a tarp



Adequate sediment management = adequate communication & stakeholder involvement



England: Wallasea Wetland Creation Project



Interpretation board



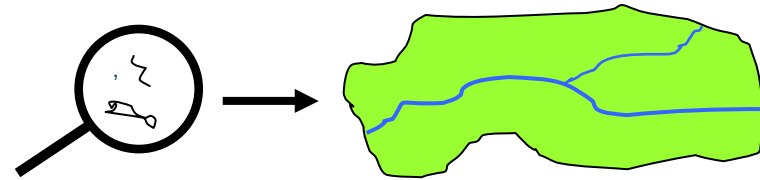
Web camera tower being erected





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Management of sediment quality = water management



- ▶ Sediment quality is a secondary management objective
- ▶ Paradigma shifts, e.g.
 - ▶ From chemical approach to water system quality based on (ecosystem) services
 - ▶ From technical solutions to achievable solutions
 - ▶ From 'owned problem' to a stakeholder proces
 - ▶ From (beta-)science-driven to an integration in river basin plans



River basin management aimed at 'services':



- ▶ Accomodate and transport of water
- ▶ Accomodate nature
- ▶ Shipping
- ▶ Agriculture
- ▶ Fisheries
- ▶ Recreation
- ▶ Drinking water
- ▶ Hydropower production



Relation water system quality – sediment management

- ▶ Space for water → morphology → depth
 - ▶ Shipping → morphology → depth
 - ▶ Ecological objectives → morphology → depth
 - ▶ Ecological objectives → sediment quality
 - ▶ Fisheries
 - ▶ Recreation
 - ▶ Drinking water
- } → sediment → water quality



Conclusions

- ▶ Adequate sediment management requires that 'various conditions are optimized'
- ▶ Sediment management = water management
- ▶ Relations between sediment quantity / quality issues and water system services need to be clarified



Thank you for your attention



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