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**An overview over the work of
SedNet - Working Group 5:
Risk Management and Communication**

Importance and Implications of Risk Perspectives and Communication in Sediment Management

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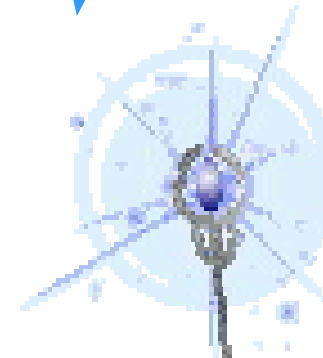


My wish list: 2002

A highly diverse WG

creative minds
unconventional thinking

commitment
to the aim
of the WG



and what it became



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The Objective of Risk Management

to reduce risk posed by contaminated sediments to humans and ecological receptors to a level, deemed tolerable by society and to control and monitor sediment quality and ensure public communication with the final aim of complying with international regulations



Risk management has to address different aspects of risk

Scientific risk ~ “objective”
= magnitude of hazard * probability of exposure

Economic risk too high expenditures necessary
loss of employment

Personal risk

mentioning of risks ↓ ↑ confidence in experts / inst.

Limited access to information ↓ ↑ personal responsibility

highly complex information ↓ ↑ understandable communication



There is not just one or THE RISK along a river basin



If only one kind of risk is addressed, the result will create controversies

If only one site is managed independently, risks will be created at other sites.



Pursuit of single interests creates conflicts and controversies





WHY TO DO A RISK MANAGEMENT



.. to find a way to efficiently invest economic resources in order to **counterbalance** the different interests (and risks) along a river basin for a long time.

FROM **BASIN** TO **LOCAL SCALE**

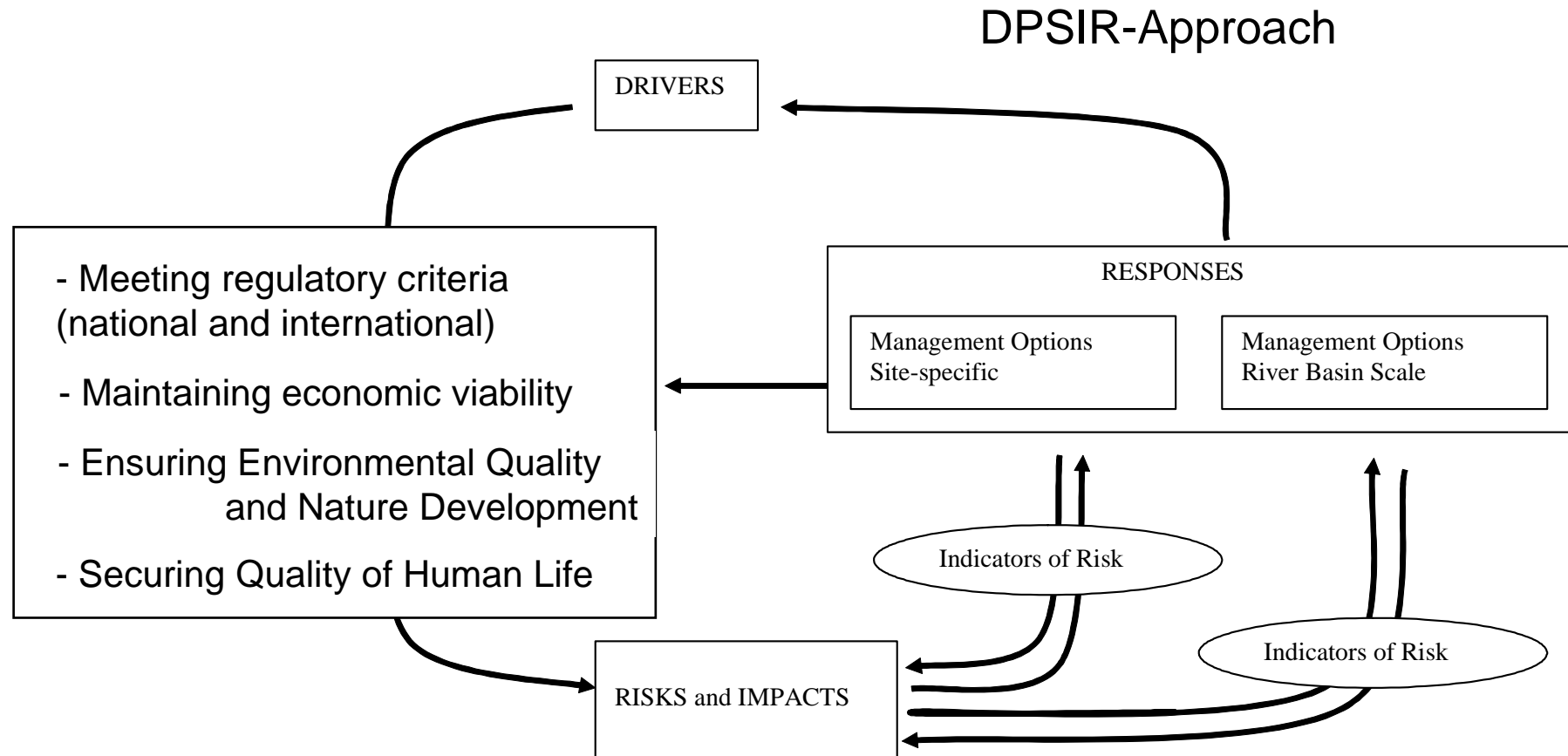


This objective can only be achieved, if.....

- the interests, objectives and risk perceptions along a river basin are known (the “human factor”) → DPSIR Approach
- the mass flow of contaminants and particles (quantitative and qualitative) within a river basin is understood (Conceptual Basin Model) → Sabine Apitz
- the risks are quantified and sites are prioritized according to their potential impacts on other up- and downstream areas

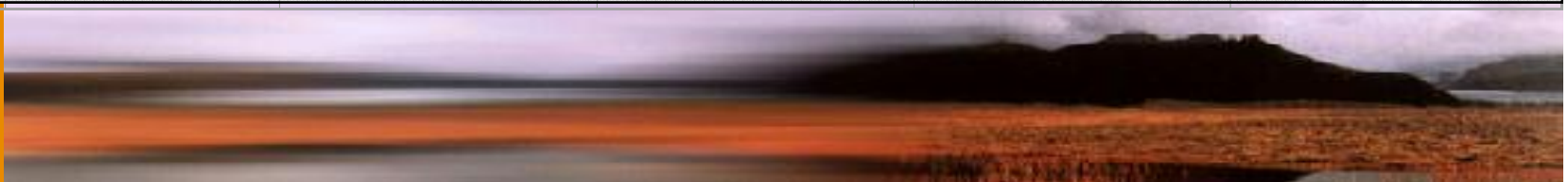


What are the interests and where are they focused?



Examples of “Ensuring environmental quality”/Maintaining economic viability

Example drivers	Risk and impacts involved	Indicator of risk		Management option	
		Site-specific	River basin approach	Site-specific	River basin approach
Ecological function	Loss of species Degradation of wat. qual.	Change in biodiversity Ecotox. effects / biomarkers Contaminant load	Change in migrating fish-species	Turn to RBM source control e.g. Adsorptive barriers	Source control, reduction of diffuse pollution, Identification of responsible contaminants,
Dredged material disposal	High cost / volume limitations of disposal options Loss of resources	Storage capacity Disposal costs Failure to comply with regulatory requirements	Decrease of maintenance activities	Confined facilities Isolation technologies Innovative treatment and beneficial use	Infrastructure development Confined facilities



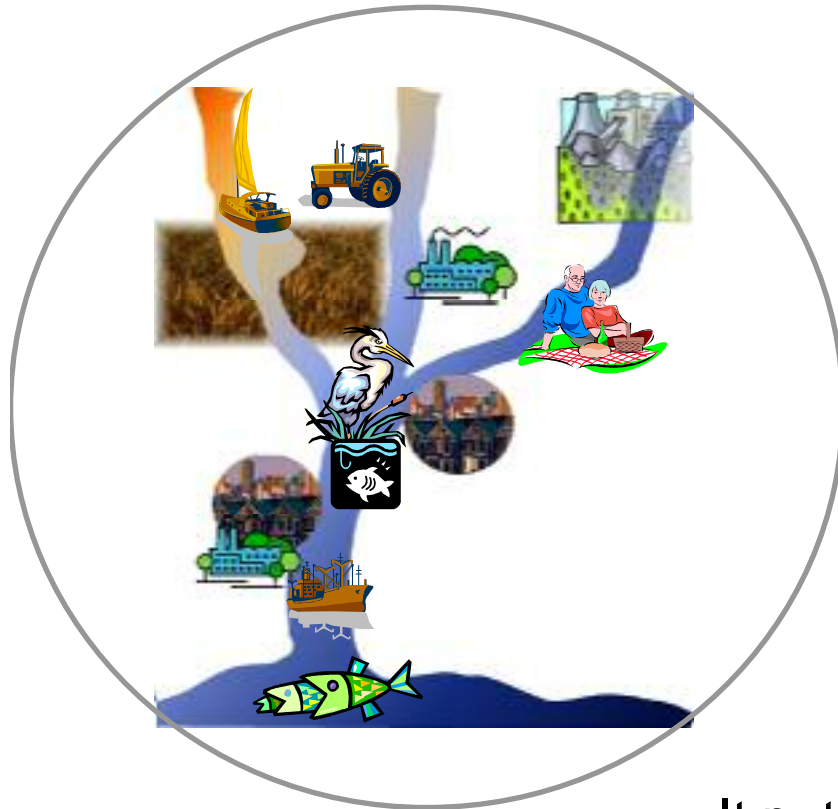
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Prioritization of sites according to risks in the basin



Our approach addresses

- Location along the up –
to downstream gradient
- (Hydrodynamic) energy
- Quantity
- Quality



It puts one site and its hazard in perspective to the other sites in the river basin



Method 1 - Score ordination

- Variables essential to the studied phenomenon are selected and ranked according to their relative importance
- Class boundaries are set for each variable

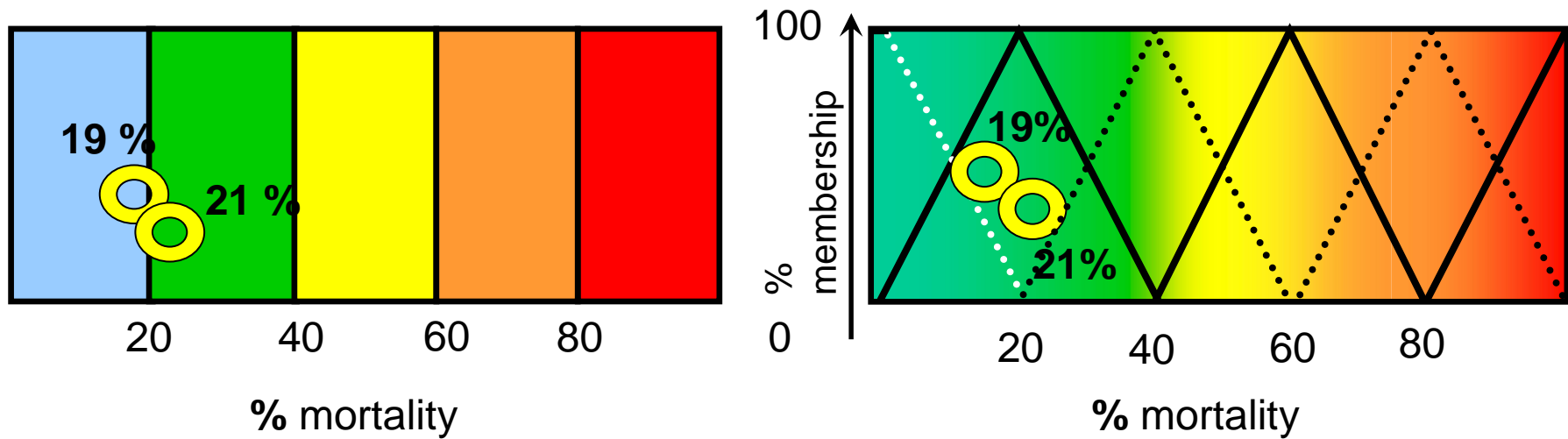
Criterion 1	Criterion 2	Combination	Rank
1 (high)	1(high)	1-1	1
1 (high)	2 (medium)	1-2	2
1 (high)	3 (low)	1-3	3
2 (medium)	1 (high)	2-1	4
...			...

Babut et al., presentation SETAC 2004



Method 2 - Fuzzy logic

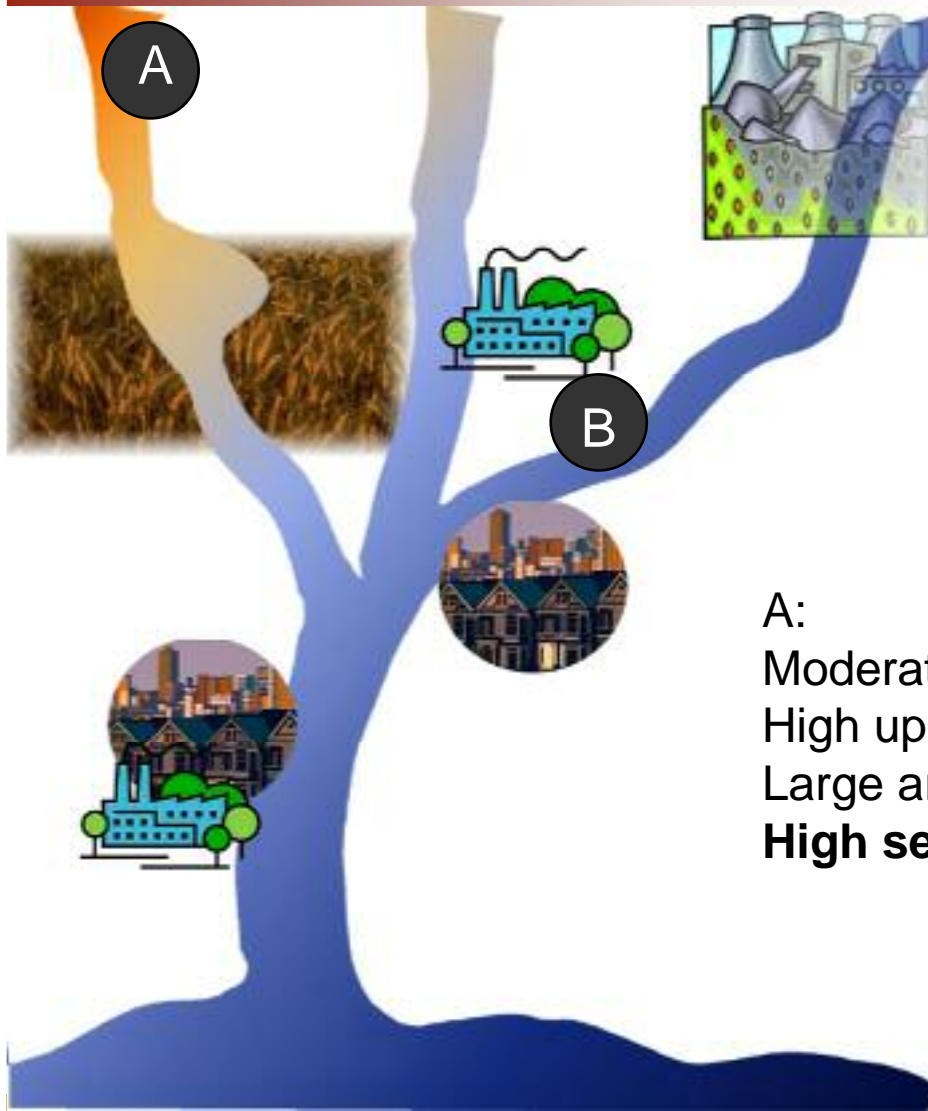
- Allows to handle uncertainty or “vague” data or rules
- And to combine heterogeneous data



Babut et al., presentation SETAC 2004



Prioritization of sites



Those sites are prioritized, where money is best invested with the highest positive impact on the whole river system

A:
Moderate contamination
High upstream
Large area contaminated
High sediment-dynamic

B:
high contamination
Middle of the river basin
Moderately sized area
Low sediment dynamic

$\text{Risk(A)} > \text{Risk(B)}$

Solutions have to be implemented on site-specific scale

This requires site specific risk assessment of sediments

- differentiation of strategies: remediation – dredged material
- need to address HHRA (biomagnification and because of public concern)
- tiered approach comprising chemical, ecotoxicological and biological criteria
- Integrated risk evaluation

It requires to address economical and social issues

and the public risk perception towards planned management activities

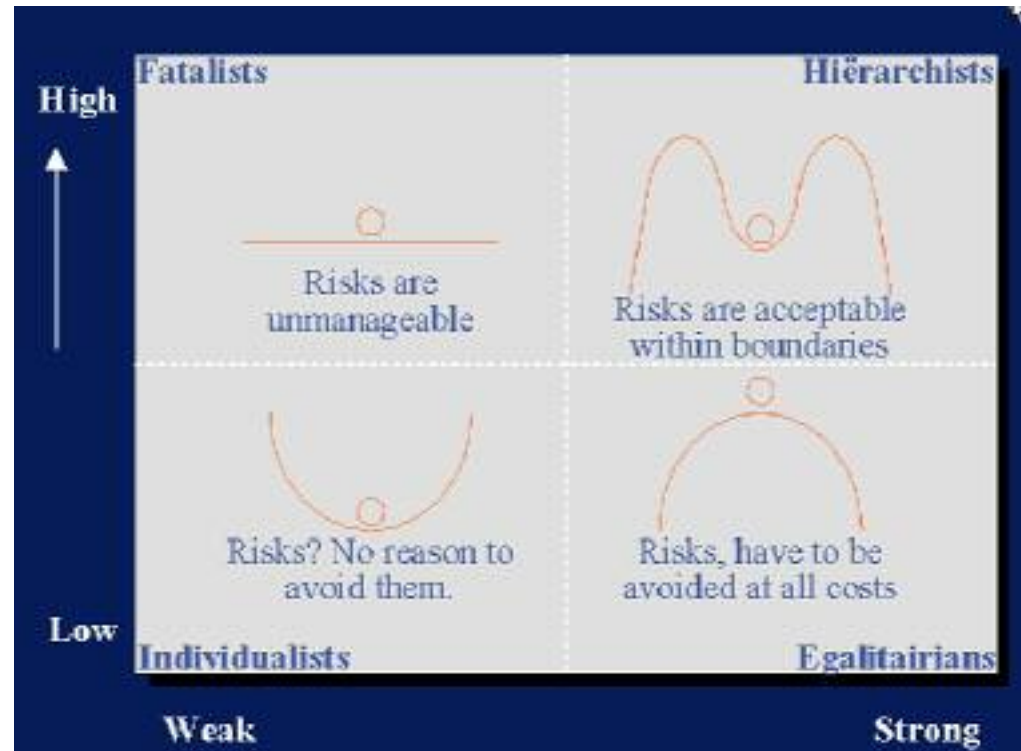




SITE-SPECIFIC RISK MANAGEMENT

HAS TO ADDRESS PUBLIC PERCEPTION

There is a need for:
Individual treatment
Trust building
Early communication





FROM BASIN TO LOCAL SCALE

....needs a river-basin specific discussion and decision forum!

This is a political process!

We hope to have developed and added
instruments and concepts
that will help to realize
a sustainable risk management
on basin scale in future!

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Thanks for your attention



The Core Group of WG5



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