Towards Risk Based Management of European River Basins

An introduction to the EC FP project.

Jos Brils
TNO, The Netherlands
Jos.Brils@tno.nl - www.riskbase.info

Rainfall induced debris flow (Slovenia, November 2000: 7 casualties in houses, picture: M. Matjaz)
RISKBASE

Addresses: topic II.2.1: “Integrated risk based management of the water-sediment-soil system at river-basin scale”.

Under: EC 6th RTD Framework Programme (FP6)

Project type: Coordination Action (CA)

Full title: CA on Risk Based Management of River Basins

Acronym: RISKBASE

Start: September 1st, 2006 (month 1)

End: August 30th, 2009 (month 36)

Website: www.riskbase.info
RISKBASE partners/contractors

Jos Brils,
TNO, NL

Thomas Track
DECHEMA, D

Philippe Negrel
BRGM, F

Werner Brack
UFZ, D

Dietmar Mueller
UBA-A, A

Damia Barcelo
CSIC, E

Winfried Blum
BOKU, A

Wim Salomons
IVM, NL

Joop Vegter
VEGTER-advice, NL

Vala Ragnarsdottir
Bristol University, UK
RISKBASE objective

to develop integrated, risk assessment-based management approaches enabling the prevention and/or reduction of the negative impacts caused by human activities on that system

More concrete: risk to what?

• Goods and services provided by the soil-sediment-water ecosystem
• Hereby focus on resilience* of this system

* Resilience: river systems have a certain, natural potency to attenuate (reduce risk) negative impacts of contaminants (Natural Attenuation):
  - Immobilisation
  - Dilution
  - Degradation
RISKBASE deliverables

1) overarching concept, generic approach and guiding principles to integrated risk based management of EU river basins

2) recommendations towards evolution and implementation of risk based management in national and community policies and towards implementation in management

3) proposal for the European research agenda related to risk based management.
Target audience

• **River basin managers** responsible for ≥ 2nd round of drafting RBMPs (Note: 1st round RBMP (< 2009) no ‘time’ to include ‘new’ concepts ..):
  - As they are probably not yet appointed, best to focus on managers involved in 1st RBMP round (the ‘trainers’)
  - We have to speak their WFD ‘language’
  - Aim at science-policy bridgers/fore front runners (those who look beyond 1st RBMP)

• But also other **stakeholders** in general industry, water companies, NGOs, OECD…

• **Decision making & policy** DG Environment & national
Objectives of River Basin Managers

According to the Water Framework Directive (WFD):

- Protection of ALL waters
- Good ecological and good chemical status by 2015
- Degradation of water bodies not allowed
- Stepwise reduction/elimination of the emission of hazardous substances
Challenges

EU river basin managers face several challenging management issues when trying to achieve the WFD objectives.

In general they have to manage:

- Hydro-morphological changes
- Quantity (water/sediment excess and shortage)
- Quality (diffuse and point source contamination)

Their main uncertainties:

- Combined impact of above issues?
- Changes in socio-economic driving forces and resulting pressures?
- Effects of climate change?
- Effectiveness of measures?

Key: improve system understanding!
DPSIR as conceptual framework for (improved) understanding of the system

Base sketch from Meade (1996)
Towards a risk-based management framework ...

RISKBASE DRAFT CONCEPT for risk-based management (RISKBASE, 2007)
Where are the main EC projects …

here there are no EC projects yet!!!

socio-economic & global change

risk of?

measures (designed solutions)

RISKBASE (a.o.)

societal system

(policy, management, public)

“science-policy interfacing”

risk to?

sources → pathways → receptors

AquaTerra, Modelkey, Nomiracle etc.

understanding biophysical system

RISKBASE DRAFT CONCEPT for risk-based management (RISKBASE, 2007)
Understand the system; understand the pressure linkages and how pressures propagate through catchments.

*Source* → *Pathway* → *Receptor*

What are the political priorities/decisions?

*the voice of “society”*

What critical linkages drive/disrupt the system?

What are the options for solving these problems?

- minimise/remove source; intercept/modify pathway; remove/protect receptor
  - e.g. - reduce fertiliser inputs; permeable reactive barriers; treat water supply

How does “society” value the benefits?

Cost Effectiveness Analysis (CEA) - focused

Cost Benefit Analysis (CBA) - holistic

How does “society” view the options?

How can “society” help with our understanding?

- anglers, dog walkers
understanding

What critical linkages drive/disrupt the system?

understand the system; understand the pressure linkages and how pressures propagate through catchments

how can “society” help with our understanding
- anglers, dog walkers

system understanding

solution design

Cost Effectiveness Analysis (CEA) - focused
Cost Benefit Analysis (CBA) - holistic

how does “society” value the benefits

the logical pathway/process line

what are the options for solving these problems?
minimise/remove source; intercept/modify pathway; remove/protect receptor
e.g. - reduce fertiliser inputs; permeable reactive barriers; treat water supply

how does “society” view the options

manage

costs & benefits

What are the political priorities/decisions

the voice of “society”

political sieve

political

socio-economic sieve

understand

Source → Pathway → Receptor

RISK BASE

13
understand the system; understand the pressure linkages and how pressures propagate through catchments

what critical linkages drive/disrupt the system?

what are the options for solving these problems?

minimise/remove source; intercept/modify pathway; remove/protect receptor

e.g. - reduce fertiliser inputs; permeable reactive barrier; water supply

how does “society” view the options?

costs & benefits

Cost Effectiveness Analysis (CEA) - focused
Cost Benefit Analysis (CBA) - holistic

how does “society” value the benefits?

solution design

what are the political priorities/decisions?

the voice of “society”

What are the political priorities/decisions?

the voice of “society”

Source → Pathway → Receptor

manage

system understanding

understand

political sieve

socio-economic sieve

the logical pathway/process line

adaptive management feedback loop
understand the system; understand the pressure linkages and how pressures propagate through catchments

how can “society” help with our understanding
  - anglers, dog walkers

What critical linkages drive/disrupt the system?

- anglers, dog walkers

Cost Effectiveness Analysis (CEA)

Cost Benefit Analysis (CBA)

what are the political priorities/decisions

the voice of “society”

politicalseive

socio-economic sieve

understand the system; understand the pressure linkages and how pressures propagate through catchments

how can “society” help with our understanding
  - anglers, dog walkers

What are the options for solving these problems?

- minimise/remove source; intercept/modify pathway; remove/reduce e.g. - reduce fertiliser inputs; permeable reactive barrier;

how does “society” view the options

RISKBASE 2006-2009

“RISKBASEdottir”

follow-up: science-policy interface?

2010-2012

the logical pathway/process line

manage

solution design

understand system understanding

risky

RISKBASE
RISKBASE working modus

• review and synthesis of the outcome of EC RTD Framework Program projects and other major initiatives
• done in several workshops dedicated to specific issues related to risk based management at the river-basin scale
• annually a General Assembly (GA)
• use EUGRIS as web-based information exchange structure
• workshops, GA and the website open to all who are interested and willing to contribute to achieve the RISKBASE goals and objectives
DPSIR as basis to RISKBASE project structure

Drivers

WP3 degradation causes, mitigation & remediation

Pressures

State

Impact & Risk

WP4 risk assessment & harmonisation

WP5 risk management, preventive approaches & policies

Response

societal system

bio-physical system

RISK

BASE
Flow of information between WPs

EC Projects FP1-6
national projects
scientific literature
NGO Reports
other major initiatives

WP 1c. River Basin Cases

WP3. + Distinction global, regional and local pressures. Likelihood of propagation and attenuation.

physical system


biophysical system


biophysical + societal system
Activity diagram (WP in-output relationships)
(program, details, dates etc. at www.riskbase.info)

GA = General Assembly  WP = Work Package  WS = Workshop

GA1 → WP1b WS1 → X-cutting WS1 resilience → WP5 WS1 → WP1b WS2 → GA2

WP1c mini WS 30-5-07

Jan '07 17 & 18 May '07 Oct - Dec '07 May '08

setting scene → ingredients from cases → building blocks → evaluate in cases → résumé ½ way

19
Thank you for your attention