

Risk assessment in risk-based management of European river basins

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Introduction: The Coordination Action RISKBASE aims to review and synthesise the outcome of EC RTD Framework Programme projects, and other major initiatives, related to integrated risk assessment-based management of the water/sediment/soil system at the river-basin scale. The synthesis will lead to the development of integrated risk assessment-based management approaches enabling the prevention and/or reduction of the negative impacts caused by human activities on that system.

This requires creating a general knowledge base on risk assessment approaches and merging the concepts, approaches, and models for the assessment of specific risks (like e.g. erosion, toxic pressure, etc) into a common scheme of integrated risk assessment at the river basin scale.

Methods: This general knowledge base was formed by a workshop during which leading European scientists and important stakeholders discussed, processed and integrated latest developments and challenges associated with the assessment of risks to European river basins. The focus was on

- ecosystem goods and services in risk-based management,
- water regulation at risk under global change,
- groundwater ecosystems and drinking water supply at risk,
- hydromorphological changes and risks to biodiversity,
- eutrophication risks to biodiversity,
- risks of environmental toxicants to ecosystem and human health,
- integrated risk assessment on a basin scale, particularly in terms of practical implementation for river basin management in order to bridge the gap between science and management practice.

Results & Discussion: During the workshop critical questions of basin scale risk assessment according to Water Framework Directive were discussed. Suggestions were made for a more appropriate addressing of sediment quality and quantity issues and for integrating assessment and measures at different scales. The good ecological status is a generally accepted goal. The workshop discussed how to operationalise this concept, how to achieve

appropriate data sets and how to derive programmes of measures to improve the ecological status. It is often claimed that improving hydromorphology and eutrophication are the solution to achieve the good ecological status in most European rivers. This was critically discussed stressing cumulative risks due to a multitude of pressures. The concept of resilience was identified to direct measures enhancing the ecological status as well as the protection of ecosystem goods and services. The workshop also addressed the chemical status and the concept of priority pollutants. Bioavailability was identified as a crucial concept for understanding ecotoxic effects while it was critically discussed in the context of pollution prevention. The requirement to move from an isolated view on the water body towards a more holistic approach integrating management of waters with land and whole environmental management was stressed and crucial steps towards this goal were identified. This means also a better integration of monitoring programmes for surface waters, groundwaters and protected areas. Reducing uncertainty was identified as a major goal of present research that helps to improve the balance between budgetary costs of river basin management and environmental benefits.

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