

## GLOWA-Elbe

### Effects of global change on the water cycle in the Elbe river basin – risks and options

#### BACKGROUND

The Elbe region is the driest of the major river basins in Germany due to its comparatively low precipitation (around 600 mm/a), and has the second lowest water availability per capita in Europe. Dry periods with their associated problems of water availability for both ecosystems and water users occur more frequently and last longer. Beside this climate situation, German reunification resulted in social changes in the Elbe region, such as loss of 3.1 million jobs and a decrease in population of around 1 million. All triggered an unwanted shift in demographics and a downturn in the economy.



The river Elbe near Meissen



#### PROBLEMS

- Water use conflicts due to an increasing trend to reduced water availability
- Loss of wetlands and floodplains due to river canalization, artificial drainage and river embankment
- Pollution of surface water by nutrient emissions (nitrogen and phosphorus) from point and non-point sources, causing high nutrient loads to the North Sea ecosystems and society in the basin are adapted to increased discharge due to groundwater withdrawal for open pit lignite mining. Changes in management will effect these ecosystems in an unfavourable way.

### SOLUTIONS

In GLOWA-Elbe, the Integrated Methodological Approach (IMA) was developed and applied as a planning framework for formulating research tasks and conventions. It consists of the following steps:

- Compilation of a catalogue of scenarios, including a set of global change scenarios for climate, demographic, economic, and societal developments, and possible policy actions at the regional scale
- Identification of relevant indicators and criteria for the evaluation of different developmental scenarios
- Analysis of the scenario impacts with respect to the selected indicators and criteria, using all available data, models as well as expert and literature knowledge
- Multicriteria analysis and equity analysis to evaluate the results, and assess policy strategies, considering current policy objectives and actor preferences.



Elbe near Buckau

### BENEFITS

- Global change challenges long-term planning in water management. Practical management requires plausible and consistent scenarios of possible climatic, technological and social developments and their impacts GLOWA-Elbe delivers recommendations to adapt the regional water management to the challenges of global change in the Elbe basin to policy-makers, stakeholders and society
- Results of the first GLOWA-Elbe phase are published in the book: „Auswirkungen des globalen Wandels auf Wasser, Umwelt und Gesellschaft im Elbegebiet“ (Effects of the global change on water, environment and society in the Elbe area), 2005 by the editors F. Wechsung, A. Becker and P. Graefe, to be published in English in 2006.
- More information on our webpage: <http://www.glowa-elbe.de>

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