Document Control Sheet

1. ISBN or ISSN	2. type of document (e.g. report, publication) Final Report

3. title

The following contributions to the joint final report with the titel: „Wirkungen des globalen Wandels auf den Wasserkreislauf im Elbegebiet - Risiken und Optionen. Schlussbericht zum BMBF-Vorhaben GLOWA-Elbe II“ constitute the final report of this project:

Blazejczak J, Gornig M, Schulz E (2008) Szenarien zur Demographie und Ökonomie in der Elbe-Region.

Hartje V et al. (2008) Regionalisierung der Szenarioanalyse (der Antriebskräfte und des Nutzungsdruckes) des globalen Wandels für die Wasserwirtschaft.

Hoymann J, Dekkers J, Koomen E (2008) Szenarien der Siedlungsflächenentwicklung im Elbeeinzugsgebiet.

Mutafoglu K (2008) Szenarien der Wassernachfrage und Wassernutzung im Elbeeinzugsgebiet bis zum Jahr 2020.

Grossmann, M. Behrendt, H. (2008) Kosteneffiziente Maßnahmenkombinationen zur Reduktion der Nährstoffeinträge im Einzugsgebiet der Elbe.

Lienhoop, N., Grossmann, M. Koch, H. (2008): Vulnerabilität durch Wasserknappheit im Kontext des globalen Wandels: Eine ökonomische Analyse von Szenarioeffekten und Wassermanagementstrategien.

Steidl, J., Dietrich, O., Rennoch, M., Balla, D. Schweigert, S., Fritsche, S., Pavlik, D., (2008) Nährstoffretentionspotentiale großer Feuchtgebiete im Elbe-Tiefland unter veränderten globalen Bedingungen.

Grossmann, M., Lienhoop. N., Vögele, S., Mutafoglu, K., Koch, H., Kaltofen, M., Dietrich, O. (2008) Economic assessment of risk associated with low flows in the Elbe River Basin: an integrated economic-hydrologic modelling approach

4. author(s) (family name, first name(s))	5.end of project September 2007
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18. abstract

The focal points analysed in the course of the project all contribute to the development of scientifically founded as well as integrated strategies for a sustainable management of the vital resource of water, in the underlying case for the catchment of the Elbe River. Both water availability and water quality issues are taken into consideration. The findings are of special relevance to maintaining the reliability of water supply in the long-term and to the development of appropriate planning tool, which support a sustainable use of water resources.

In order to address both water availability and water quality challenges, as well as potential conflicts over the use of water resources, scenarios of economic and demographic development are required, which allow conclusions about the impact of uses on water resources in the various regions of the Elbe River Basin. For this purpose, scenarios of demographic and economic development were developed, as well as scenarios on the future development of land use, e. g. with respect to settlement areas.

The development of scenarios of future industrial water use represents one contribution, to analyse potential future impacts of water uses on water resources. In this context, approaches to value a temporarily reduced availability of surface water both from an economic and a water supply management perspective were developed, both for this and other groups of water users.

With respect to long-term strategies aimed at achieving water quality goals, various strategies to reducing nutrient emissions were analysed by means of a cost-effectiveness analysis. For this purpose, potential measures to lower nutrient emissions were integrated into the existing nutrient model MONERIS. For the strategies under consideration, different methods were developed to assess the respective cost of implementation. This procedure resulted in an integrated economic-hydrologic model which has previously not been existent for such a large area in Germany as the Elbe River Basin. The model does not only allow calculating cost-effectiveness relations of measure with respect to emissions but also with respect to nutrient loads, taking potential retention of nutrients in the hydrologic system under consideration. The cost of combinations of various measures and their contribution to water quality goals can be derived for the Elbe River as well as for its tributaries. Accordingly, changes of the required nutrient reduction efforts as induced by altering runoff patterns caused by climate change or by changes of socio-economic determinants as e. g. demographic developments can be evaluated as well.

19. keywords

integrated assessment, global change scenarios, water quality, water quantity, water demand, river basin management, land use change, economic and population development

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