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## SCENES

### Water Scenarios for Europe and for Neighbouring States

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Thematic priority: Global change and ecosystems

#### DIA2.8

#### Special issue on cross-scale scenario analysis

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## **DIA2.8**

### **Special issue on cross-scale scenario analysis**

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**Preface to the Special Issue** (Kämäri et al. 2011)

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The future of Europe's waters will be influenced by a combination of many environmental, social, political, and policy drivers, such as climate change, population changes, land use change, as well as economical and technological developments. Political developments, such as the enlargement of the European Union and relationships between EU member states, accession countries and non-member states, will also have an impact on Europe's waters. Amongst the most important policy drivers are the current and future agricultural, industrial, energy, trade, transportation and environmental policies.

One of the most important policy drivers is the implementation of the EU Water Framework Directive (WFD). The WFD promotes sustainable water use based on long-term protection of water resources, in particular, by mandating that Member States develop river basin management plans for each river district in the light of the national and EU development strategies. Scenarios are descriptions of possible futures that reflect different perspectives on past, present and future developments. Scenario development aims to combine analytical knowledge with creative thinking in an effort to capture a wide range of possible future developments in a limited number of outlooks. Scenarios should be based on coherent and inherent and internally consistent set of assumptions about the key relationships and driving forces. Scenarios are particularly useful in cases where the time scales are longer than those used for conventional planning, such as river basin management plans, and great uncertainty prevails for the development of the phenomenon.

In the present Special Issue of the Journal of Water and Climate Change the nine papers address long-term plausible futures of European waters, the development of multi-scale water scenarios within the SCENES project. To produce a set of policy relevant scenarios it is necessary to focus on three spatial scales, the pan-European scale, the regional scale, and a water management unit scale (referred to as Pilot Areas), to test the processes on a number of case studies. Pan-European scenarios are downscaled to the Pilot Area level, and in a later phase Pilot Area scenarios are upscaled through the regional level back to the pan-European level, completing a full top-down bottom-up cycle. The paper by Kok & van Vliet (2011) describes the toolbox developed for the participatory scenario development process. The main objective of this paper is to analyze the potential added value of each tool by evaluating the contribution to the quality of the resulting scenarios. Several of these tools are employed in subsequent papers of this volume describing key results of the case studies. The paper by Veidemane et al. (2011) describes results of participatory

scenario development process on a regional scale in the Eastern Baltic region. Papers by Gielczewski et al. (2011), Iital et al. (2011), Khadra et al. (2011), Zhovtonog et al. (2011) and Zhulidov et al. (2011) address the future water issues on a Pilot Area scale in Estonia, Poland, Italy, Ukraine and Russia, respectively.

The process of developing scenarios consists of a highly participatory part within which qualitative scenarios are being developed and a quantitative part focusing on drivers, models and indicators. In the paper by Schneider et al. (2011) the global scale hydrological model WaterGAP is applied to simulate current and future river discharges under a changing climate. The river discharges are then used to estimate bankfull flow conditions, to determine three different inundation parameters, and to evaluate the hydrological consequences and their relation to ecology.

In seeking to develop alternative ‘futures’ for Europe’s waters at a pan-European and local scale, policy issues are critical. The paper by Farmer (2011) explores cross-scale governance between the EU and Member State level arising from the identification of key policy priorities by stakeholders. The analysis is based on six Pilot Areas across Europe and their relationship to EU policy development and implementation. The issue of climate change is seen by many stakeholders as a key factor affecting the future of Europe’s waters.

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