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Integrated Science for Sustainable Water Management in the Jordan River Basin

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Abstract

Existing approaches in the Jordan River basin for water resources management under global change and globalisation suffer from a lack of integration, in particular with regard to operational linkages between relevant disciplines and between science and application. For example, socio-economic projections and scenarios require more information on biophysical effects of different management options, in particular with respect to water quality and quantity. Natural sciences often focus on areas that are not central for

policy- and decisions-making in regional water resources management and development. Both scientific branches have to respond to the requests from water managers for representative spatial information .

Scientists from Germany, Israel, Palestine and Jordan try to overcome these gaps in an interdisciplinary co-operation within the BMBF funded GLOWA (Global Changes in the Hydrological Cycle) Jordan River project. The study region is densely populated with people of three nationalities. It hosts a variety of dryland eco-systems that preserve genetic resources and provide a range of ecosystem services. Per-capita water availability is already among the lowest worldwide in terms of quantity and adequate quality; and the demand-supply gap will widen further, e.g. due to the expected climatic changes in the Mediterranean and rapid demographic development. Integration of disciplinary research e.g. through coupled models, geographically explicit quantitative scenarios, continuous stakeholder participation and a dedicated decision support system does not only synthesize new and applicable knowledge for the study region, but also add experience for transfer of approaches and results to other dryland regions.

Initial applications of the WEAP (Water Evaluation and Planning) tool and SAS (Story and Simulation) scenarios, jointly between scientists and stakeholders, focus research and data consolidation on the real requirements for integrated water (and land) management.

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