



Centre for World Food Studies (SOW-VU)  
Amsterdam  
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## Regional Integration and Resource Use in the Middle East: Water and the Need for Peace (FEM21-02)

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**Water scarcity has been a recurrent source of tension between Israel and riparian states of the Jordan River basin, all of which are stakeholders, as tributaries, as users or both. Yet, the potential gains from joint water management are substantial and could act as a catalyzer towards peaceful cooperation. The project seeks to quantify these gains and to define the strategies for realizing them.**<sup>1</sup>

### Road Map for Water?

Joint management of the scarce water resources in the Jordan River basin is critical for a future development of agriculture as well as urban settlements in the region. The project 'Regional Integration and Resource Use in the Middle East; Water and the Need for Peace' studies the availability, distribution and use of water and the impact of alternative water management policies on the stakeholders: Lebanon, Syria, Jordan, Israel and territories under the Palestinian Authority.

### Sharing a common resource

The stakeholders use water from closely related sources, e.g. the rivers Jordan, Yarmouck and Zarqa. In addition, Israel and the Palestinian Authority use the

same aquifers for their groundwater. Whereas upstream countries Syria and Lebanon are contributors rather than users, Jordan, Israel and the Palestinian Authority rely heavily on the Jordan River for their water supply. By World Bank standards they are classified as water stress zones. In 2000, availability in the territory of the Palestinian Authority already even fell below a critical threshold, while Jordan is likely to reach this level in 2020, given its high rates of population growth. Hence, the efficient management of water resources is an urgent priority. Yet, present water charges are often symbolic at best, and there are no explicit payments from net importers to net exporters of water. In fact, a mere redistribution of water use will not do, as all stakeholders except Lebanon and Syria, essentially face serious shortages.

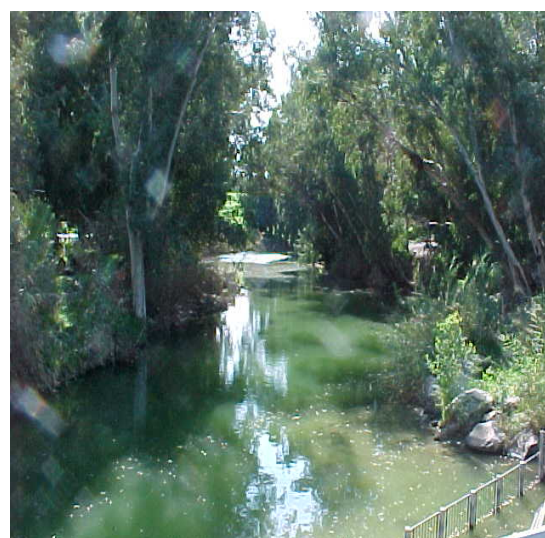
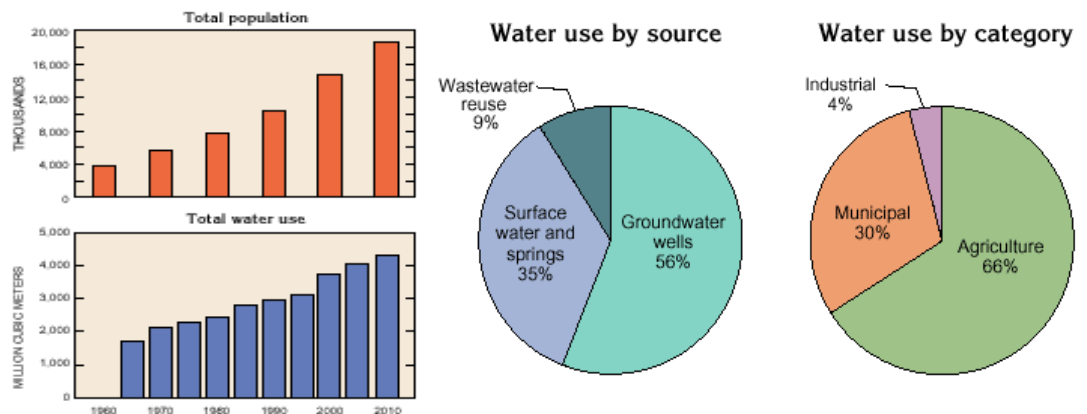


Figure 1. Jordan river below Lake Tiberias

<sup>1</sup> The project is conducted by prof. M.A. Keyzer, dr. H.Houba and dr. B.G.J.S. Sonneveld of the Centre for World Food Studies of the Vrije Universiteit, Amsterdam and cooperates with prof. B. Lücke of the Department of Economics, University of Hamburg. Please, contact [b.g.j.s.sonneveld@sow.vu.nl](mailto:b.g.j.s.sonneveld@sow.vu.nl) for further information.



**Figure 2. Water use in the Jordan Valley**  
(source: Middle East Water Data Banks Project, 1998).

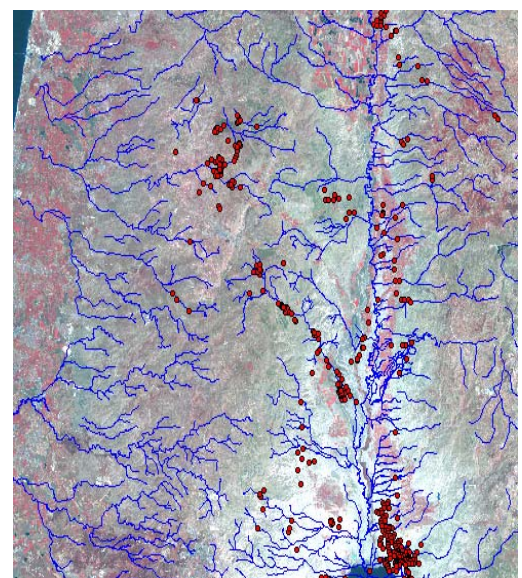
Thus, any regionally sustainable strategy would have to expand current water supply, and to operate a water master plan with imports from outside, additional recycling, and possibly new modes of desalinization.

#### The price of water

The management of scarce resources calls for adequate incentives, i.e. users should pay the correct price to the suppliers to guarantee an efficient allocation of the water. Therefore, the project will, in addition to mapping out the actual flows and economic uses of water, also evaluate on a fine grid of locations in the Jordan Basin the implicit economic contribution of water to the economy, by calculating site-specific marginal values of water flows and stocks and present these as a water value map. Besides providing an indication of the relative scarcity and a benchmark for cost-benefit assessments of water development projects, this value map will serve in calculations that trace the user value back to the territories that deliver the water, quantifying in this way the implicit transfers that currently take place between the countries. The map will also be used to assess the cost and economic implications of depletion of groundwater resources at various locations. In addition, different modes of user charges will be compared, including those that account for damages from salinization. Finally, it will study some of the implications of arrangements to expand water supplies from external sources.

#### A spatially explicit equilibrium model

The main tool under construction for this project is a (multi-commodity) spatially explicit equilibrium model with special detail on agriculture and with water as focal commodity. To calibrate this model, the project is currently compiling an extensive georeferenced database, which combines information from the respective National Bureaus of Statistics, as well as databases kindly made available by research institutions (e.g. Hebrew University of Jerusalem; Applied Research Institute Jerusalem, Palestinian Authority), private consultants (EnviroConsult, Jordan; Seibersdorf, Austria) and international organizations (FAO and ICARDA). The findings of the study will be disseminated through submissions to conferences, journals and through special workshops to be held in the region.



**Figure 3. Tributaries and groundwater**  
(source: Seibersdorf, 2001)

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The Centre for World Food Studies (Dutch acronym SOW-VU) is a research institute related to the Department of Economics and Econometrics of the Vrije Universiteit Amsterdam. It was established in 1977 and engages in quantitative analyses to support national and international policy formulation in the areas of food, agriculture and development cooperation.

SOW-VU's research is directed towards the theoretical and empirical assessment of the mechanisms, which determine food production, food consumption and nutritional status. Its main activities concern the design and application of regional and national models, which put special emphasis on the food and agricultural sector. An analysis of the behavior and options of socio-economic groups, including their response to price and investment policies and to externally induced changes, can contribute to the evaluation of alternative development strategies.

SOW-VU emphasizes the need to collaborate with local researchers and policy makers and to increase their planning capacity.

SOW-VU's research record consists of a series of staff working papers (for mainly internal use), research memoranda (refereed) and research reports (refereed, prepared through team work).

Centre for World Food Studies  
SOW-VU  
De Boelelaan 1105  
1081 HV Amsterdam  
The Netherlands

Telephone (31) 20 - 59 89321  
Telefax (31) 20 - 59 89325  
Email [pm@sow.vu.nl](mailto:pm@sow.vu.nl)  
www <http://www.sow.vu.nl/>