



## SMART – Summary and Policy Briefs

### SMART Project – Summary

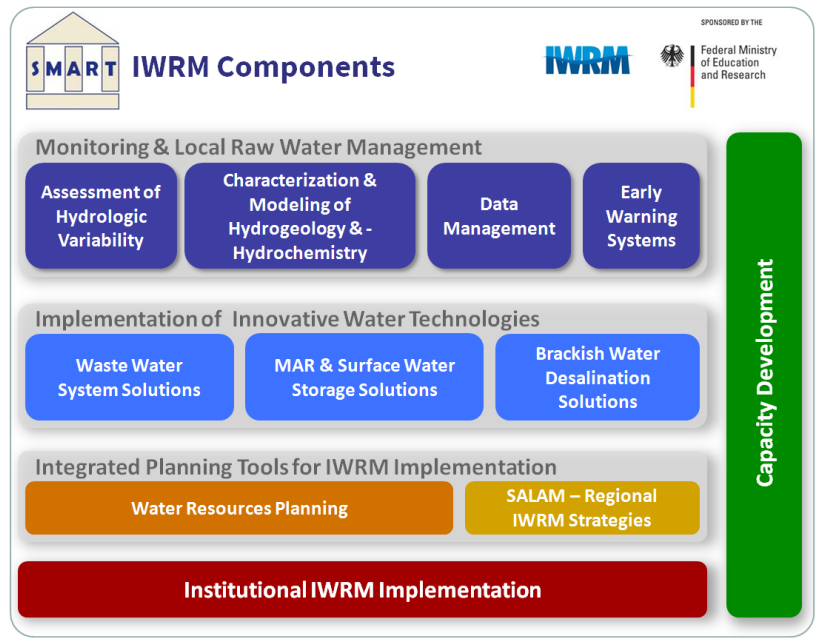
In 2004 the German Federal Ministry of Education and Research (BMBF) launched the Integrated Water Resources Management (IWRM) Initiative with reference to the United Nations Millennium Summit 2000 and other international appeals and agreements, which saw the huge potential of IWRM for secure drinking water supply, economical and social development, sanitation provision, and environmental protection and rehabilitation.

As one of the major projects of the BMBF IWRM program **SMART** (Sustainable Management of Available Water Resources with Innovative Technologies) was funded over three phases between 2006 to 2018 with a focus on the development and implementation of a comprehensive and sustainable IWRM concept for the Lower Jordan Valley (LJV) with its neighbours Jordan, Israel, and the Palestinian Territories. With varying focuses the project region extends from south of Lake Tiberias to north of the Dead Sea and is surrounded by the mountain ranges in the west and in the east. A strong expert consortium of German and regional academic, governmental, non-governmental, and industry partners were responsible for the complex interdisciplinary work

program starting from the definition of the IWRM concept to the final implementation. The schematic diagram in figure 1 depicts the major components of the developed and implemented IWRM concept.

General water scarcity characterizes the project region due to the hot and dry climate conditions coinciding with a dynamically growing water demand mainly driven by fast population growth. Other factors are groundwater deterioration and the reduced flow rate in the Lower Jordan River due to high water withdrawal from Lake Tiberias, which represents one of

the central political water conflicts in the area. However, while the natural replenishment of the LJV water resources suffers from the extreme temporal and spatial hydraulic variability (precipitation, aquifer recharge, flood run-off, spring discharges) these sources can be more efficiently harvested using optimized surface storage and MAR technologies. In addition, the area has still high potential for brackish water desalination adding to the pool of water resources. Despite all efforts to develop unexploited water resources and to improve water use efficiency, the growing demand requires the consequent application of



adjusted innovative Decentralized Waste Water Treatment (DWWT) technologies, water production by sea water desalination and groundwater protection measures. According to the SMART product schematic diagram integrated water planning tools are the third pillar of the SMART IWRM concept because only they facilitate the development of sustainable, economically feasible, and resilient water development options. As an extension to this component regional strategies have been considered in the sub-project SALAM, which assesses the general technical and economical feasibility of alternative regional water production (i.e. sea water desalination) and regional transfer options.

To support the integrated transfer of technologies and management instruments to the general water management practice in the region the local decision makers and stakeholders were continuously consulted and involved in the IWRM development and implementation process and the formulation of guidelines. All SMART phases and work packages had a strong focus on Capacity Development on technical, institutional and academic level.

## Policy Briefs

- The SMART consortium generated a number of products, i.e. general findings, tools as well as recommendations for direct applications, summarized individually as Policy Briefs. The Policy Briefs provide an overview of the work

performed, processed with the regulatory authorities and decision makers in mind. They comprise:

## Monitoring & Local Raw Water Management

- Hydrological data acquisition, variability scenarios, and modeling for water resources planning – Jericho-Auja
- Groundwater Model of the Alluvial Aquifer of Jericho-Auja
- The Marsaba-Feshcha groundwater basin and Ein Feshcha spring group: vulnerabilities, risks, water resources potential
- Early Warning System for spring water contamination in Wadi Shueib
- Vulnerability and risk mapping to strengthen the link between waste water treatment and groundwater protection in the hot spot area Wadi Shueib
- Transboundary Groundwater Model of the Lower Jordan Valley

## Implementation of Innovative Water Technologies

- Managed aquifer recharge planning for the Jericho-Auja area
- Managed aquifer recharge (MAR) along the eastern Lower Jordan Valley - General Potential and Deir Alla Test Site
- A Handbook on Brackish Water Usage in Water-Scarce Regions – The Jordan Valley
- Treatment performance and suitability of EU-Certified DWWT-technologies treating

strong wastewater representative for Jordan

- Competence Facility for Decentralized Wastewater Management
- Real-Scale Implementation of Decentralized Wastewater Treatment and Reuse Systems
- National Implementation Committee for Effective Integrated Wastewater Management in Jordan – NIC

## Integrated Planning Tools for IWRM Implementation

- IWRM Concept and WEAP-Application, Cluster West
- Socioeconomic and Political context of Integrated Water Resources Management in the Lower Jordan Valley
- Economic assessment of alternative water plans in Jordan
- Water management scenarios for Wadi Shueib using WEAP and MODFLOW models
- GIS-based decision support: Assessment of Local Lowest-Cost Wastewater Management Solution (ALLOWS)

## Regional IWRM Strategies

- The SALAM Initiative: Concepts and Approaches for the Resolution of the Water Deficit Problem in the Middle East at Regional Scale

## Capacity Development

- Water Fun – hands, minds and hearts on Water for Life!

The individual Policy Briefs can be downloaded at:

<http://www.iwr-smart-move.de/index.php/smart-products/smart-policy-briefs>



## Partners of the SMART Consortium during Phases I-III

### Germany

- Georg-August-University Göttingen
- Karlsruhe Institute of Technology
- Helmholtz Centre for Environmental Research
- Training and Demonstration Centre for Decentralized Sewage Treatment (BDZ)
- University Cottbus
- Heidelberg University
- DVGW - Research Center at Engler-Bunte-Institut
- DVWG - Water Technology Center
- ATB Umwelttechnologien GmbH
- Rusteberg Water Consulting
- SEBA Hydrometrie GmbH
- Disy Informationssysteme GmbH
- BAUER AG
- Development And Assessment Institute In Waste Water Technology at RWTH Aachen
- Hans Huber AG
- Kary-Planaqua GmbH

### Israel

- Water Commissioner
- Tel Aviv University
- Hebrew University
- Ben Gurion University
- Mekorot Water Company Ltd.
- Environmental & Water Resources Engineering

### Jordan

- Ministry of Water and Irrigation
- Water Authority of Jordan
- Jordan Valley Authority
- Jordan University
- Al-Balqa Applied University
- Arab Technologist for Economical and Environmental Consultation
- ECO-Consult
- NAW - Nabil Ayoub Wakileh & Co.

### Palestinian Territories

- Palestinian Water Authority
- Ministry of Agriculture
- Palestinian Hydrology Group
- Al Quds University
- Hydro-Engineering Consultancy



SMART policy briefs present relevant scientific results of the SMART I, II and -MOVE projects concerning a transferable approach for Integrated Water Resources Management in the Lower Jordan Valley.

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