



Water Availability and Security
in Southern Europe and the
Mediterranean
<http://www.wassermed.eu>

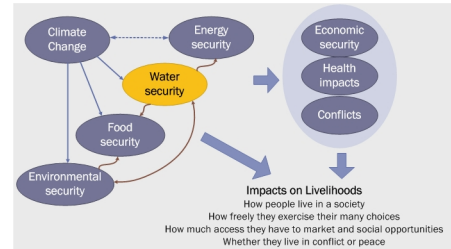
The WASSERMed Case Studies: Development process and tools



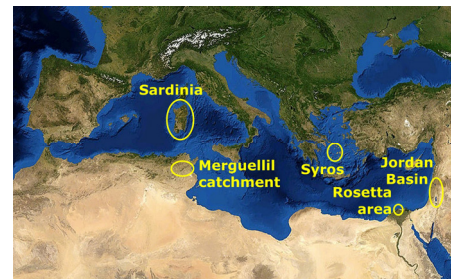
The WASSERMed Case Studies on water-related security threats

In addition to Mediterranean-wide assessments, WASSERMed developed Case Studies in five different areas of the Mediterranean Basin. The 5 areas were selected to represent regions of different geo-climatic conditions, facing diverse water-related challenges and levels of susceptibility to climate variability and change.

The objective behind the Case Study development was to assess, in an integrated way, the direct and indirect impacts of climate change, focusing on potential water-related security threats and adaptation measures towards their mitigation. As such, the corresponding Case Study themes were defined based on the current socio-economic profile, the range and impacts of water management issues, as well as local policy concerns and research priorities.



Water-related security threats, as conceptualised in WASSERMed



The WASSERMed Case Study areas

In brief:

- WASSERMed developed 5 Case Studies in different areas of the Mediterranean Basin (Syros, Greece; Sardinia, Italy; Merguellil catchment, Tunisia; Jordan River Basin, Jordan; Rosetta area, Egypt)
- The Case Studies followed a stepwise approach for the analysis of water-related security threats and the development of Case-specific and broader policy recommendations for adapting to climate change
- Stakeholder involvement was actively pursued throughout the project, in order to foster mutual learning and orient research outputs towards decision-making needs and priorities

The scope of the WASSERMed Case Studies

Area	WASSERMed Case Study scope
Sardinia (IT)	Impacts on agriculture and tourism; Water supply enhancement and allocation
Merguellil (TN)	Impacts on agriculture, surface and groundwater availability; Resilience to extreme events
Syros (GR)	Impacts on tourism, agriculture; Water balance and supply capacity expansion; Enhancement of agricultural activity and groundwater protection
Rosetta (EG)	Impacts of sea level rise and Nile water availability on agriculture and urban water use
Jordan Basin (JO)	Impacts on agriculture, water availability and water balance

Stakeholder involvement

Stakeholder involvement was pursued throughout the development of the WASSERMed Case Studies, in order to foster a mutual learning process and ensure that project approaches, methods and results inform and are relevant to local priorities.

The process was articulated through dedicated events to which all local actors were invited to participate, to share their experience and knowledge and discuss the WASSERMed research results.

Events were organized in 3 rounds. The 1st round concerned the framing of the Case Studies, in relation to local policy objectives and research, and the identifi-

cation of factors that determine current and future vulnerability and how these can be linked to security threats, considering the current status of the system.

During the 2nd round, the objective was to develop scenarios for the future by analysing how the factors that determine current vulnerability will evolve and affect the range of future impacts by 2050.

Finally, the 3rd round of events focussed on the discussion of simulation results and adaptation options, in terms of suitability and effectiveness in mitigating the identified threats, as well as the trade-offs involved in alternative responses.

Further Information

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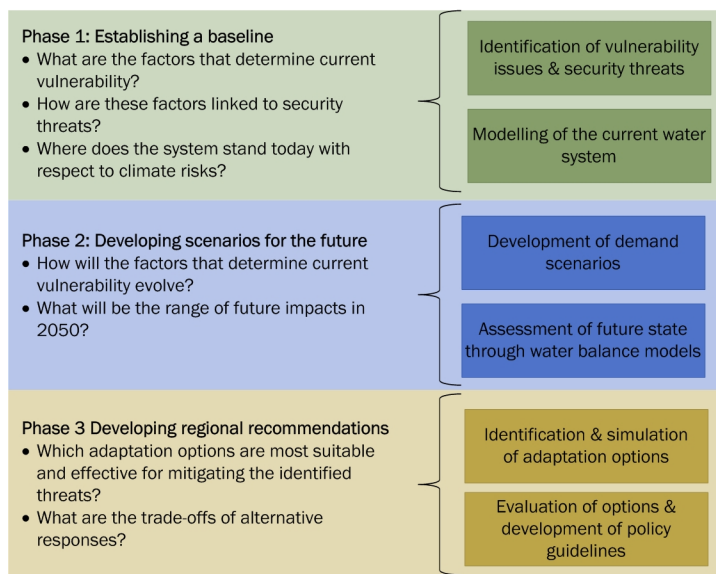
The Case Study development process

The Case Studies were elaborated in three distinct (3) Phases.

Phase 1 concerned the “**Establishment of a baseline**”, and was aimed at the framing of the Case Studies and the clarification of the focus of their analyses. During this Phase, a conceptual analysis of the factors that influence the current vulnerability of water systems and strategic economic sectors was developed, following a cause-effect (problem tree or DPSIR) analysis.

Phase 2 concerned the “**Development of future scenarios**”, and involved the investigation of the impacts of climate change on hydrological patterns and on sensitive water use sectors, for a mid-term time horizon (2050). The analysis yielded a comprehensive assessment of the future vulnerabilities of the Case Study water systems, and of the threats that can potentially be faced under climate change conditions, accounting for the uncertainty associated with future climate projections and socio-economic developments.

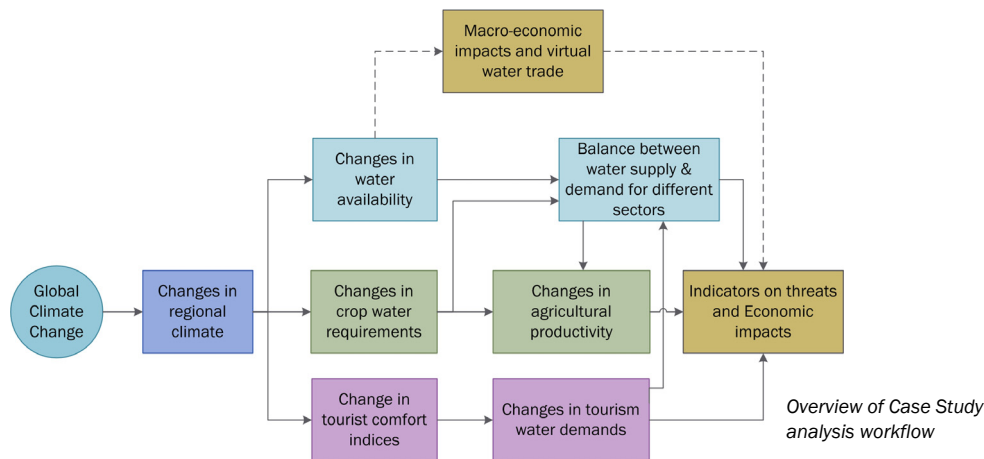
Phase 3 dealt with the “**Development of policy recommendations**”, through the identification and simulation of potential responses (adaptation measures) to enhance resilience and reduce long-term risks to water security and other sectors. The evaluation of options was made jointly with stakeholders, considering the costs, benefits and effectiveness in mitigating potential threats.



Framing questions and phases in the development of the WASSERMed Case Studies

Methods and tools

For the above assessments, WASSERMed implemented a workflow based on the joint application of different tools and models, which were soft-linked to allow for the integrated assessment of climate change impacts in each region.



Models applied to support Case Study analyses

Workflow component	Models and tools
Regional Climate projections	FP6 ENSEMBLES project dataset
Crop water requirements and water productivity in the agricultural sector	CROPWAT, AquaCrop, SIMETAW, CropSys, WOFOST
Tourism-comfort indices, water-demand patterns	GIS-based tool for the assessment of the Tourism Climate Index, Correlation models
Water balance	System Dynamics Modelling, WaterStrategyMan DSS
Macro-economic impacts	Global Water-Oriented CGE Model