



Sustainable Water Storage and Distribution in The Mediterranean

Most Suitable Nbs at Each Demo Site for Proper Water Management Are Categorised

VERSION 1.0



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Acronyms

DMP	Data Management Plan
WP	Work Package
CO	Consortium
PU	Public
R	Report
O	Other
DEM	Demonstrator
PT	Platform
NbS	Nature-based solution
MED	Mediterranean
UFZ	Helmholtz Centre for Environmental Research
RSS	Remote Sensing Solutions GmbH
UPV	Universitat Politècnica de València
IDRICA	Idrica
SEMIDE	Euro-Mediterranean Information System on know-how in the Water sector
TdV	La Tour du Valat
TUC	Technical University of Crete
UNIPR	Università di Parma
UNISS	University of Sassari
UNINA	University of Naples Federico II
RSCN	Royal Society for the Conservation of Nature
LPM	Living Planet Morocco
AGRI	AgroInsider
ESIM	Higher School of Engineering of Medjez El Bab
BU	Boğaziçi University
BMP	Best Management Practices

Executive summary

The overall objective of the "Sustainable Water Storage and Distribution in The Mediterranean" (OurMED) project is to design and explore innovative and sustainable storage and distribution systems tightly integrated into ecosystem management at the river basin scale. This is achieved by the combination of scientific and local knowledge, emerging from new and long-lasting spaces for social learning among interdependent stakeholders, society actors and scientific researchers in eight local and one regional MED demo sites. OurMED calls for a transition from a mono-sectoral water management approach based on trade-offs, to equitable multi-sectoral and integrative management that addresses all water bodies' capabilities and needs towards sustainability.

This Milestone document is for reporting on the process and results of detailed characterisation of most suitable NbS for each demo site considering the stakeholders' needs collected in WP3. OurMED project targets shifting water resources management at a basin scale from a narrow engineering problem to multi-objective actions that, simultaneously, ensure access to fresh water, in sufficient quantity and quality for diverse sectors and maintain ecological functions. Prioritizing NbS alongside artificial water infrastructure such as reservoirs, not only benefits water management but many economic, social and environmental co-benefits at a basin scale. This milestone is a preparatory investigation for Deliverable 5.1, which will include a detailed report on the most suitable NbS for proper water management for demo sites. Here, however, a summary of suitable NbS solutions for each demo site will be listed based on preliminary results and initial interactions with the demo sites' stakeholders.

1. Introduction

1.1. Purpose

Nature-Based Solutions (NbS) are actions to protect, sustainably manage, and restore natural and modified ecosystems effectively and adaptively, simultaneously benefiting biodiversity and human well-being. NbS for sustainable water management are not new practices, but they are often developed lacking multiple benefits thinking. This milestone aims to explore how the OurMED demo sites can serve as a complementary array of innovative Nature-based Solutions (NbS) with multiple benefits and co-benefits towards the equitable management of water resources at each demo site. Importantly, it will also explore the challenges of bringing various stakeholders together (WP3) to agree on multiple benefit solutions and developing innovative financing mechanisms to implement such solutions successfully at the basin scale. The long-term goal of this WP5 is to pave a strong foundation for sustainable NbS implementation in the MED region, considering a holistic approach including the design, development, evaluation and evidence to the users until establishing the basis for their market uptake and exploitation activities.

The European Commission defines NbS as “solutions inspired and supported by nature that provide environmental, social, and economic benefits and build resilience.” Benefits of NBS include:

- Enhancing sustainable urbanization.
- Restoring degraded ecosystems.
- Developing climate change adaptation and mitigation.
- Improving risk management and resilience.

According to the IUCN, NbS are actions to protect, manage, and restore ecosystems to address societal challenges and provide human well-being and biodiversity benefits. NbS must address multiple societal challenges and are classified into green, blue, and hybrid components.

1.2. Framework for NbS Analysis and Selection

OurMED includes a complementary array of basin-wide demo sites. Each site was selected to highlight the key water challenges in the MED region. The basin-wide multi-sectoral analyses and assessments will ensure the identification and implementation of long-term sustainable NbS solutions. Also, a case study involving an upscaling approach to the MED basin scale will also be considered, allowing greater transferability of developed solutions beyond the selected sites.

1.3. Demo sites

The OurMED project focuses on nine demo sites with water storage and distribution challenges:

- **Bode Catchment, Germany:** Droughts and deforestation impact water quality.
- **Jucar Basin, Spain:** Urban development impacts water quality in Albufera Lake.
- **Agia Region, Crete, Greece:** Water management to mitigate seawater intrusion.
- **Arborea, Italy:** Challenges in water use efficiency and conservation.
- **Mujib River Basin, Jordan:** Severe water scarcity and salinization.
- **Sebou River Basin, Morocco:** Biodiversity protection and water distribution.
- **Medjerda River Basin, Tunisia:** Water stress from floods, droughts, and reservoir siltation.
- **Konya Closed Basin, Turkey:** Groundwater decline and water scarcity.
- **MED Sea Region:** Rapid demographic growth and climate change pressures.

2. Methodology

2.1. Introduction

The methodology for NbS includes defining ecosystems, climate conditions, soil types, geomorphology, stakeholder analysis, and socio-economic conditions.

2.1.1. Identification of NbS for Each Demo-Site

3.1 Bode (Germany)

- **Description:** The Bode river basin in central Germany faces droughts and deforestation. The region has diverse landscapes and significant water management challenges.
- **Socio-Economic Features:** The area is crucial for drinking water and agriculture.
- **Main Issues:** Prolonged droughts, nutrient leaching, and changes in agricultural practices.
- **Tailored NbS:** Surface water harvesting, wetland restoration, afforestation, and smart water management strategies.

3.2 Jucar (Spain) - Albufera Natural Park

- **Description:** Albufera Lake faces water quality issues due to urban and industrial impacts.
- **Socio-Economic Features:** Agriculture, tourism, and fishing are key activities.
- **Main Issues:** Eutrophication, water quality, and salinization.
- **Tailored NbS:** Constructed wetlands, stormwater management, and sustainable urban drainage systems.

3.3 Agia (Crete, Greece)

- Description: Agia faces groundwater overexploitation and sedimentation issues.
- Socio-Economic Features: Agriculture and tourism are primary activities.
- Main Issues: Groundwater quality, lake sedimentation, and water level fluctuations.
- Tailored NbS: Retention basins, wetland conservation, sustainable agriculture, and afforestation.

3.4 Arborea (Italy)

- Description: The Arborea site in Sardinia faces water distribution, pollution, and energy challenges.
- Socio-Economic Features: Agriculture, aquaculture, and tourism are key sectors.
- Main Issues: Nitrate pollution, groundwater overuse, and saline intrusion.
- Tailored NbS: Aquifer recharge, wetland conservation, riparian zone restoration, and smart irrigation practices.

3.5 Mujib (Jordan)

- Description: The Mujib River Basin faces water quality and scarcity challenges.
- Socio-Economic Features: Agriculture, mining, and tourism are important.
- Main Issues: Water loss, land degradation, and biodiversity loss.
- Tailored NbS: Soil conservation, climate-resilient agriculture, and vegetative cover restoration.

3.6 Sebou (Morocco)

- Description: The Sebou site has diverse landscapes and significant water management challenges.
- Socio-Economic Features: Agriculture and eco-tourism are key activities.
- Main Issues: Water scarcity, groundwater overuse, and pollution.
- Tailored NbS: Rainwater harvesting, ecosystem restoration, and smart agriculture practices.

3.7 Medjerda (Tunisia)

- Description: The Medjerda river basin faces sedimentation and water distribution issues.
- Socio-Economic Features: Agriculture and biodiversity conservation are important.
- Main Issues: Sedimentation and water stress.

- Tailored NbS: Riparian zone restoration, wetland conservation, and rainwater harvesting.

3.8 Konya (Turkey)

- Description: The Konya Closed Basin faces water scarcity and overexploitation.
- Socio-Economic Features: Agriculture and industrial activities are prominent.
- Main Issues: Water overexploitation, aquifer depletion, and sinkholes.
- Tailored NbS: Wetland restoration, rainwater harvesting, and ecosystem restoration.

3.9 MED Regional

- Description: The Mediterranean region is a biodiversity hotspot facing rapid population growth and climate change.
- Socio-Economic Features: Agriculture, fishing, and tourism are major sectors.
- Main Issues: Climate change, water scarcity, and biodiversity loss.
- Tailored NBS: Vegetative cover, wetland conservation, dune grass restoration, and ecosystem restoration.