Mediterranean Integrated System for Water Supply (MEDISS)

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Background

MEDISS “Mediterranean Integrated System for water Supply” is a project financed by the ENI CBC MED Program: Cooperation across borders in the Mediterranean, thematic “B.4 Environmental protection, climate change adaptation and mitigation” with priority “B.4.1 Water efficiency”. Six partners are involved in the project: Palestinian Wastewater Engineers Group and Jericho authorities (Palestine), Aqaba Water Company (Jordan), Institute des Regions Arides (Tunisia), CRENoS and Enas with the local stakeholders Cooperativa Produttori Arborea, Municipality of Arborea (Italy).

Aims and Goals

The project aimed to addresses the issue of improving the quality of saline groundwater present in the MED area opening up alternative irrigation for higher quality and more diversified cultivations. Specific Objectives are threefold: - - - To reduce water and soil salinity through non-conventional water supply, reduce stress on groundwater and enabling high productivity and diversification of agricultural production; To support non-conventional water solutions for agricultural use, to reduce water consumption and limit costs for water supply and reduce the water, soil and crop impact; To encourage behavioral change of end-users toward the use of non-conventional water agriculture.

Actions taken

To help address the problems of the Mediterranean areas involved in the project, MEDISS has experimented new innovative solutions. In particular:

- In Palestine (Jordan Valley) MEDISS is collecting lost surface water in Wadi Quilt, blending it with saline water from artesian wells and Treated Waste Water from

Jericho city and then using it to irrigate pilot areas;
- In Jordan (Governorate of Aqaba) innovative approach never tested before in the Middle East is applied to the reverse osmosis (RO) desalination plant of brackish groundwater, extending membrane's lifetime with innovative treatments and using photovoltaic (PV) panels for energy supply. Water is then used both for irrigation (1,4 ha) and domestic use by local inhabitants
- In Tunisia (Gabes) MEDISS has developed existing pilot plant (8 ha) for tertiary treatment through infiltration percolation, and tested an innovative filter bed of clay;
- In Italy (Arborea) MEDISS has developed a prototype for ammonia stripping from waste sludge, in a plant equipped with biogas cogeneration producing electricity and heat and contributing to the support of the plant itself.

Main Achievement to date

- One database on the water supply, water quality, soil composition and crops situation in the 4 target areas.
- Four innovative solutions for NCW supply implemented for different irrigation and domestic purposes.
- 1451.4 hectares of land irrigated with treated wastewater.
- Four handover agreements with beneficiaries, local authorities and water agencies to ensure the management of plants after the end of MEDISS project.
- Four cross-border thematic practitioners and research networks on NCW supply for agricultural and domestic purposes.
- Four local governance plans that integrate MEDISS NCW supply solutions.

Partners
Palestinian Wastewater Engineers Group (PWEG) Sardinian water authority - Enas; Projects and structures department; University of Cagliari - CIREM section CRENOS Centre For North South Economic Research Aqaba Water Company Quality Assurance and Strategic Planning Department Arid Regions Institute Governorate of Jericho & Al-Aghwar

Lessons, replicability and scalability potential

Italy:

The pilot plant built in Arborea (Sardinia) meets the two objectives of

- Reducing the impact of ammonia in water and on the soil, creating repeatable best practice in nitrate-vulnerable areas;
- Producing low-impact fertilizer for agriculture.

The next goal is to create an industrial-scale plant given the large amount of raw material available in the Cooperative Produttori Arborea for treatment and the opportunity to have numerous farmers and breeders in need of fertilizer.

Tunisia:

IRA focused first studies on the analyses of soils irrigated by treated wastewater for different periods (1; 7 and 15 years) and this for the summer and winter period to better understand the behaviour and evolution of the soil structure. These results are the subject for the tracing of a future strategy for the irrigated perimeter.

The second study concerns the improvement of the physic-chemical and bacteriological quality of wastewater treated by the installation of an experimental process of percolation infiltration. A follow-up of the various parameters is carried out and the results obtained will be the object of the optimization of the purification efficiency of the system for a possibility of enlarging this type of treatment.

There is a big pressure on the use of aquifers in the Mediterranean region for irrigation and desalination of water is still a costly and energy-demanding process. MEDISS addresses the issue of improving the quality of saline groundwater present in the Mediterranean area opening alternative irrigation for higher quality and more diversified cultivations (dates, citrus, etc.). According to the features and specific needs of the partner areas - Palestine (Jordan Valley), Jordan (Aqaba Governorate), Italy (Arborea) and Tunisia (Gabès) - MEDISS tested innovative solutions in the use of treated wastewater and desalination of brackish water. Specific awareness initiatives for end-users challenged their reluctance toward non-conventional water resources (NCWR) and trained them on Best Agricultural Practices.

On the longer term, the project will contribute to reducing stress on freshwater, as well as costs for water supply. At the same time, higher productivity and diversification of crops will increase food security and income for farmers. Local communities and institutions will be empowered, contributing to behavioural change on the use of NCW and on environmentally and economically sustainable development.

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Facebook
https://www.facebook.com/medissjordan

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1M - 5M €

Environmental
High

Social
Medium

Technological
Medium-High

Financial
Medium

Institutional
Medium

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Featured Image

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Nexus Dimensions
Ecosystems
Energy
Food
Water

City
Palestine (Jordan Valley), Jordan (Aqaba Governorate), Italy (Arborea) and Tunisia (Gabès)

Visibility
Public

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