

Thematic area

Water Management



Section I

Topic 1 - Water reuse and water desalination for agricultural and food production



Budget

2,000,000 €



Duration

36 months



Project

1/DSWAP

Decision support-based approach for sustainable water reuse application in agricultural production

Context

Wastewater treatment requirements for effluents used for irrigation are considerably different from those of effluents discharged to aquatic environments. For example, nitrogen and phosphorus are essential elements for plant cultivation and therefore exhaustive processes for reducing nutrients (i.e. denitrification and phosphate removal) are not imperative in wastewater reuse for irrigation. Conversely, the potential association between chemical and microbial contaminants in effluents and irrigated crops, makes them a potential public health hazard, and the detrimental long-term effects of soil salinity on soil structure and crop yield in treated wastewater irrigated fields (especially in clay-rich soils) suggests that salt removal may be crucial when irrigating with effluents. This project adopts a circular economy approach that aims for the safe and sustainable valorisation of sewage for irrigation with minimal ecological and agronomic impacts.

Objective

The overall objective of this project is to develop modular, de-centralized wastewater treatment/irrigation networks coupled to a decision support tool that enable coupling/decoupling of modules for microbial/chemicals of emerging concern/salinity removal as a function of measured parameters to ensure cost-effective optimal water quality for irrigation and long-term sustainability of irrigated soils. Individual modules within these networks (compiled based on specific requirements) will be coupled to alternative energy sources to reduce costs and greenhouse gas emissions.

Expected impacts

The project is expected to result in a paradigm shift from conventional wastewater treatment approaches that are specifically designed for ef-

Coordinating institution

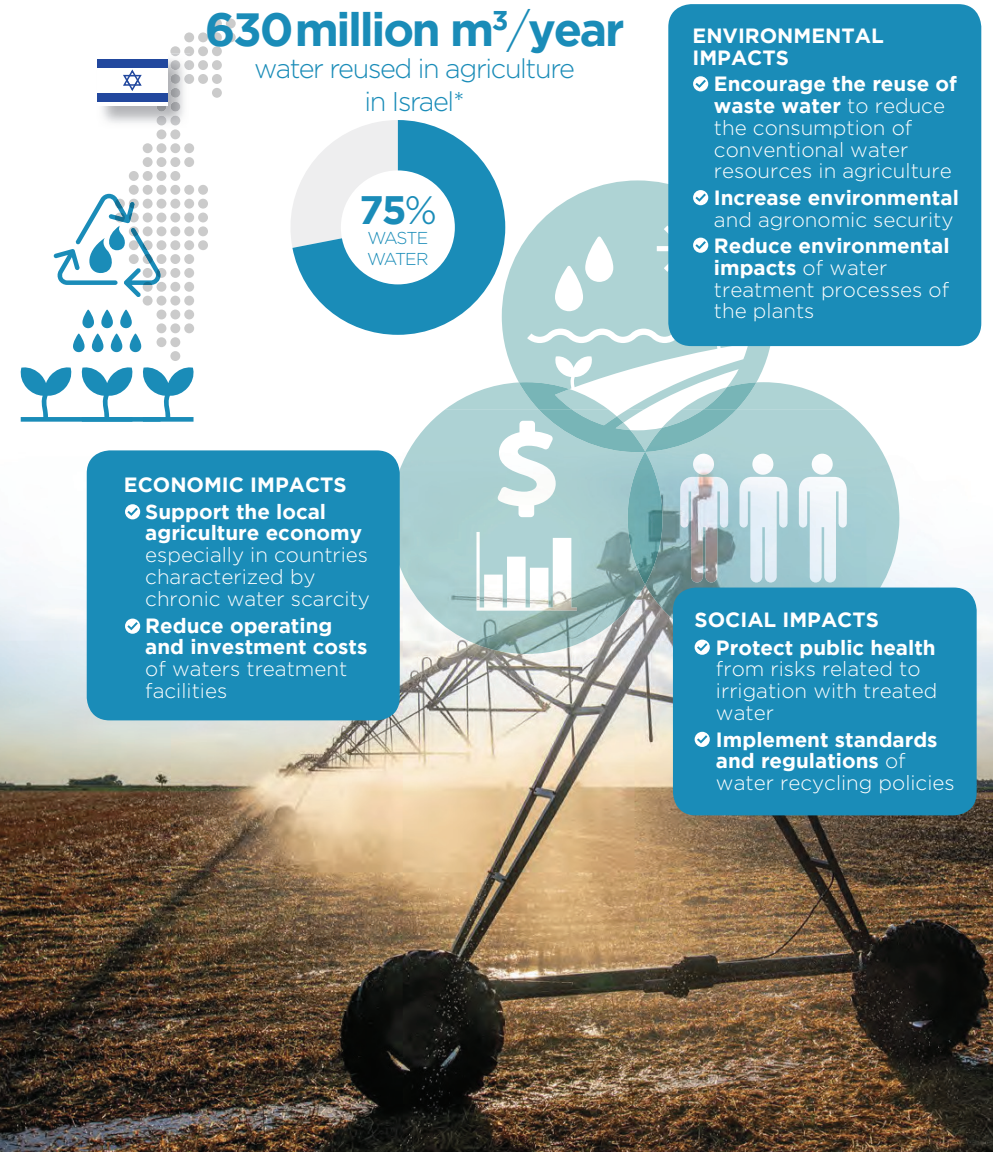
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luent discharge to aquatic environments, to systems designed for wastewater reuse. DSWAP will overcome the sanitary doubts associated with wastewater reuse practices and will bring innovative technological solutions to societal challenges relating to water shortages and demand for irrigation, and the need for safe and sustainable agricultural production. By providing safe (for the public and environment) crop irrigation water at lower operational costs and investments, DSWAP will help support local agriculture and the regional implementation of water recycling policies / regulations, which will have a significant added value in the economy of countries trying to establish solid water balances.



Coordinating country

Israel

Participating countries/ 7



Partners/ 10

