

## Israel's Water Crisis and The Solutions

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Middle East states can be categorized into countries which have surplus of natural fresh water, such as Turkey, Iraq and Lebanon, and those who are poor in such water, like Jordan and Israel. In the latter, natural water reservoirs cannot support the growing demand of the country.

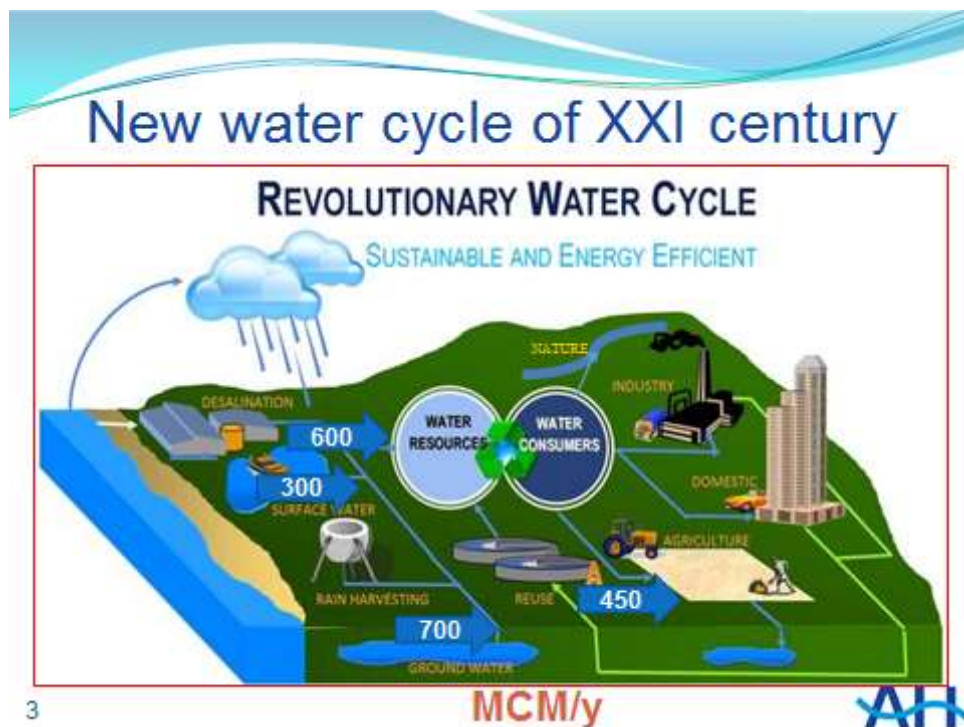
In this article, we will focus on the way water treatment and supplies in Israel are managed in terms of water quality. Recent draught episodes and 30 years of groundwater over-pumping have resulted in a challenging, new water management program.

Israel has had to cope with the above problems using its scientific and technological capabilities. The way it is being done is by generating more water, thus keeping its independence and control of that valuable resource in the most economical manner.

The core of the Israel Water and Wastewater Authority's long-term program is the development of alternative, non-conventional water resources, most of which are water reuse projects and SWRO (sea water reverse osmosis) and some brackish water desalination plants. Each one of the latter is planned to supply 20-25 percent of the total water demand.

Currently, Israel reuses about 80 percent, i.e. 450 MCM/y (million cubic meters per year) of its wastewater which represents 50 percent of the total agricultural irrigation capacity; and, five large SWRO plants are operating with a total capacity of about 600 MCM/y, which equals about 60 percent of the total drinking water supply. These projects are being skillfully integrated into the existing national water system.

Water reuse, supported by policy and research, is and will be a major water source for Israel at least for the first half of the 21st century. Actually, Israel is expanding the hydrological cycle. Instead of having only water resources like rain from the atmosphere, waste water reclamation is entering into the hydrological cycle as this is also a water resource. Urban use, still developing with landscape irrigation as its current main use, will follow agricultural use. In the arid and semi-arid Mediterranean basin, water reuse can also serve as a promoter of peace and economic stability.



Credit: Adin Holdings Ltd.

Israel is world renowned for pioneering drip irrigation systems, sea water desalination technologies and water security. There are numerous R&D and innovation areas that Israel has specialized in for agriculture, urban areas and in industry, which resulted from fruitful industry-academy-government funding cooperation. Examples are water saving devices, water leakage detectors in water networks, water and wastewater treatment methods, system management and optimization models, computerized systems and automatic control for water management, and monitoring water quality and early warning systems. To preserve the environment and public health, new sets of regulations and standards relating to water and wastewater quality have been issued, updated and progressively enforced.

***"In the arid and semi-arid Mediterranean basin, water reuse can also serve as a promoter of peace and economic stability"***

It can be concluded that water scarcity issues require careful prioritization of the way new water sources are used, where the first choice could be reuse of effluents. This saves water while at the same time reduces environmental pollution and public health risks by untreated wastewater. After exhausting reuse potential, additional water sources, such as brackish groundwater and seawater can be desalinated and used.

Israel, through technology and innovation, has gone through this decision-making process and has successfully built a new water cycle integrating natural fresh water and artificial water sources. We welcome authorities and experts from other countries to take advantage of our experience in country, regional and municipal scales.

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