

# WATER

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Water is considered as a national resource of utmost importance in Israel as it is vital to ensure the population's well-being and quality of life and to preserve the rural-agricultural sector.

Located on the edge of a desert belt, however, Israel has always suffered a [scarcity of water](#). Archeological discoveries reveal that local inhabitants even thousands of years ago were already concerned with water conservation, as evidenced by a variety of systems designed to collect, store, and transfer rainwater from one place to another.

As maximum use has been made of all freshwater sources, ways are being developed to exploit marginal water resources through the recycling of waste brackish water, and desalination of seawater.

To overcome regional imbalances in water availability, most of Israel's freshwater sources are joined in an integrated grid. Its central artery, the National Water Carrier, completed in 1964, brings water from the north and central regions, through a network of giant pipes, aqueducts, open canals, reservoirs, tunnels, dams and pumping stations, to the semi-arid south.

## Water Usage and Resources

In 2009, Israel's total water consumption sat at 1.811 million cubic meters which was divided among agricultural needs (1.016 million cubic meters), domestic needs (685 million cubic meters), and industrial needs (110 million cubic meters). That same year, Israel's total water production was only a slightly higher 1.849 million cubic meters.

Israel's main freshwater resources are: [Lake Kinneret](#) - the Sea of Galilee; the Coastal Aquifer - along the Mediterranean Sea; and the Mountain Aquifer - under the Carmel mountain range. Additional smaller regional resources are located in the Upper Galilee, Western Galilee, Beit Shean Valley, [Jordan Valley](#), the Dead Sea Rift, the [Negev](#) and the Arava. The long-term average quantity of replenishable water from major water resources amounts to about 1,850 MCM per year.

The scarcity of water is not only an environmental, social, and political issue, but is also a security risk, as it affects Israel's economy and plays a role in peace talks.

For years, Israelis have participated at the cutting edge of water conservation technology. Israel maintains approximately 60 billion cubic feet of renewable water per year, 65 percent of which is used for irrigation, and the remaining 35 for industrial and municipal purposes.

Israel's national water company, the government-owned Mekorot Water Company Ltd, manages the country's water resources and the development of new sources. Mekorot produces about two-thirds of the country's water, and provides water for all cities, industries, and agricultural areas in Israel. Privately-owned water companies supply the rest.

The shortage of water in the southern, semi-arid region of Israel required the construction of an extensive water-delivery system that supplies water to this region from resources in the north. Thus, most of the country's fresh water resources were inter-connected into the National Water Carrier, commissioned in 1964. The National Water Carrier, an integrated network of pumping stations, reservoirs, canals, and pipelines, supplies a blend of surface and groundwater. Water not required by consumers is recharged into the aquifer through spreading basins and dual-purpose wells. Recharging of aquifers helps to prevent evaporation losses and, in the coastal area, intrusion of seawater. The National Water Carrier supplies a total of 1,000 major consumers, including 18 municipalities and 80 local authorities.

Environmental deterioration has worsened due the rapid growth of agriculture, industry, and cities. The coastal region, home to the majority of citizens and the country's industry, is also the site of such environmental legislation as the Mediterranean Action Plan, concerning shore inspection, clean-ups, and pollution reduction. Groundwater pollution is mainly caused by chemical fertilizers, pesticides, seawater intrusion, and industrial and household wastewater. The quality of drinking water is kept under strict supervision.

After drawing on nearly all of its readily available water resources and promoting vigorous conservation programs, Israel has long made it a national mission to stretch existing sources by developing non-conventional water sources, while promoting conservation. These efforts have focused on the following: reclaimed wastewater effluents; intercepted runoff and artificial recharge; artificially-induced rainfall - cloud seeding; and desalination.

### **Water Conservation and Water Use Efficiency**

Water conservation is the most reliable and least expensive way to stretch the country's water resources, and the challenge is being met in all sectors. Public water conservation campaigns coupled with technical and economic measures are being applied to reduce consumption and to increase awareness of water scarcity.

Israeli engineers and agriculturalists have developed and implemented the revolutionary drip system, which has reduced water consumption by 50-70% compared with gravity irrigation, and by 10-20% compared to sprinkler irrigation. Recently, growers have been introducing the first generation of ultra-low application rate (minute irrigation) drip emitters for soil-less media in greenhouses. Considered even more advanced and efficient than the drip system, they create optimal air-water relationships in the plants' root zones.

Micro-spraying and micro-sprinkling irrigation accessories have also been developed, mainly for use in orchards, where each tree is irrigated by its individual sprayer.

In the domestic and urban sectors, conservation efforts focus on improvements in efficiency, resource management, repair, control and monitoring of municipal water systems. Citizens are urged to save water. The slogan "Don't waste a drop" is known in every home in Israel. Parks have been placed under a conservation regime, including planting drought-resistant plants and watering at night.

### **Water Management Policy**

In 1959, a comprehensive water law was passed, making water resources public property and regulating water resource exploitation and allocation, as well as pollution prevention and water conservation. Under the law,

all available water resources are made accessible to consumers, as directed by the Water Commissioner. The Water Commissioner is responsible for implementing the government's policy, ensuring sufficient water supply of the required quality and reliability, while conserving and preserving water resources.

In February 2005, an agreement was signed to establish a second [seawater desalination plant](#). The \$85 million plant is located in the Palmahim area and, after becoming fully operational in 2007, will produce 30 million cubic meters of purified water a year. This project follows a plant built at [Ashkelon](#), which produces 100 million cubic meters of pure water.

On August 6, 2005, Israel and [Turkey](#) signed a groundbreaking agreement in which Turkey exports 1.75 billion cubic feet of water from its Manavgat River to Israel each year for the next 20 years. While the Turkish water is expected to fulfill only about three percent of Israel's needs during the 20-year period, it is Israel's first water import agreement and a further expansion of burgeoning economic ties between the two countries. The deal, which will be worth \$800 million to \$1 billion, "will create a new reality in the region," former Israeli Foreign Minister [Shimon Peres](#) said. "I hope that Turkey will be the major supplier of water to the region."

Still at issue is the actual transporting of the water to Israel, which is expected to entail a high cost. Oil tankers will likely be used, but must first be refurbished to make them safe for hauling water.

