Facts and Figures on Israel's Water Shortage

A Message from Jewish National Fund

Israel's usable water supply is at an all-time low. There are several reasons that the water shortage has reached such extreme proportions: Israel is a semi-arid region with few sources of water; there have been several consecutive years of drought; its population is growing rapidly; and the standard of living, with its accompanying consumption of water per capita, is rising.

WATER CONSUMPTION

- Israel's total annual water consumption is more than 500 billion gallons.
- Because of a severe drought, the natural replenishment of Israel's water resources does not meet the demand for water, resulting in a significant deficit. The over-consumption of these water resources poses a threat to water quality and ecosystems.
- The distribution of consumption is as follows: 5% for industrial use, 38% for household use, 50% for agriculture, 5% for Israel's commitment to its neighbors, and 2 % for nature.
- The average Israeli uses 31,680 gallons of water per year.
- By the year 2020 the population of Israel is expected to increase by three million people. The country will require nearly another 80 billion gallons of drinking water to cope with this population growth and the ever-rising standard of living.

NATURAL WATER SOURCES

Israel's natural sources of water include underground water from the mountain and coastal plain aquifers and surface water (Lake Kinneret, rivers, streams).

Aquifers

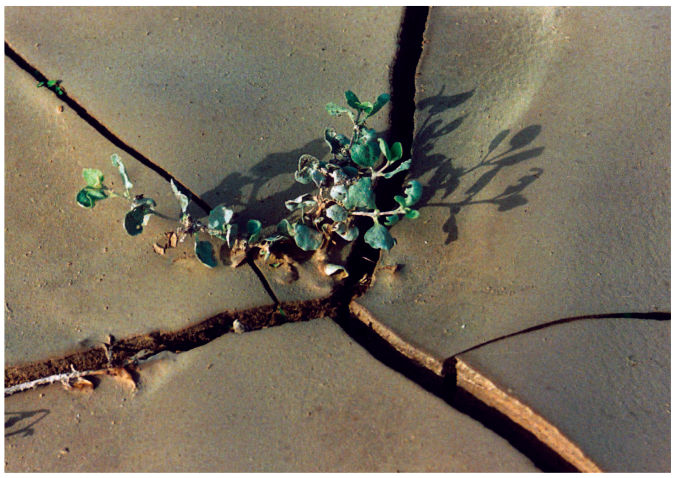
- Approximately two-thirds of Israel's water supply comes from water that is stored naturally underground and pumped from wells or springs.
- The coastal aquifer extends along the Mediterranean coastline, from Caesarea southward. This water, which is stored in sand, sandstone or gravel, is heavily exposed to pollution. It is located under the most populated area in Israel, with many cities, factories, power stations, garbage dumps and fields above it—all of which produce pollutants that flow or seep into the underground water. In addition, over-pumping causes seawater to penetrate the aquifer. During recent years many wells in the area have been closed because of pollution and salination of underground water.
- The mountain aquifer extends from the mountains and foothills of Zichron Ya'akov in the north to Be'er Sheva in the south. The quality of this underground water is better than that of the coastal aquifer, but it is also exposed to pollution since the land above it is severely cracked, hollow, and rocky, allowing pollutants to permeate and spread rapidly.

Surface Water

- The most important source of surface water in Israel is the Kinneret (Sea of Galilee). It is 46 meters deep at its lowest point and provides one quarter of Israel's water. Water is pumped from the Kinneret and distributed throughout the country through the national carrier. At 231 meters below sea level, the Kinneret is the lowest freshwater lake in the world.
- A century ago 20,000 people lived in the vicinity of the Kinneret; today the population is approximately 300,000. During the summer, about two million vacationers visit this freshwater lake. The pollution level of the Kinneret has risen significantly with this population growth.
- During the 2008/2009 winter season, the level of the Kinneret rose by only 36 inches, compared to 63 inches in an average year. Israel's Water Authority has predicted that the Kinneret's level will soon drop below the so-called "black line," the point at which pumping machinery will no longer be submerged.
- Israel's other sources of surface water—springs, rivers, and lakes—are extremely scarce. There are no large rivers in the country; many small rivers that were once a source of clean water have either dried up because of the drought or become polluted.

ALTERNATIVE WATER SOURCES

- The water shortage in Israel has resulted in the need for alternative water sources: purified sewage water for agricultural use, captured floodwater, and desalinated sea water. There are tremendous amounts of sewage water, floodwater, and salt water in Israel that are not being optimally utilized. Storing this water and improving its quality will significantly increase Israel's amount of available water.
- Jewish National Fund foresaw the significance of the water issue and began allocating resources to build reservoirs in the late 1980s. Thanks to the contributions of JNF supporters, 204 reservoirs and dams have been built across Israel to date, adding more than 66 billion gallons of treated water and flood water to the national water economy (12% of the total).
- This water irrigates about 112 thousand acres of orchards and field crops, meeting 40% of Israel's agricultural water needs and saving scarce freshwater for domestic consumption.
- Because of the water crisis, farmers face water quotas and a constant increase in the cost of fresh water, making recycled waste water vital to the agriculture industry. In addition to conserving fresh water, recycling waste water decreases pollution of the environment.
- More than 70% of the sewage water in Israel is purified, the highest amount of any country in the world. Spain comes in second, with only 17% of it sewage water getting recycled. However, nearly 34 billion gallons of waste



water in Israel do not get recycled. JNF has committed to building another 40 reservoirs over the next five years.

- In addition to holding recycled waste water, some JNF reservoirs capture rainwater and flood runoff, which would otherwise be lost to the sea, for irrigation and to enrich underground aquifers.
- JNF's research on the uses of recycled water, as well as the continued building of reservoirs all over the country, are an immediate solution to alleviating Israel's water predicament and are an integral part of its plans for supplying water over the long term.
- Another method for dealing with the water shortage is desalination. There are already several desalination facilities in Israel—the plant in Ashkelon is the largest in the world. Israel's Water Authority has set forth a goal of desalinating 200 billion gallons of water by 2015 to supply most of Israel's household water needs.

OTHER JNF WATER PROJECTS

River Rehabilitation

- In 1993, JNF and Israel's Ministry of the Environment created the River Rehabilitation Authority, an umbrella organization for more than 15 governmental, non-profit and research bodies concerned with river health and restoration.
- River restoration includes channel regulation to conduct floodwaters, waste reduction programs, and raising purification levels to a suitable baseline for fish breeding and selective irrigation.
- More than a dozen streams have already benefited from JNF's efforts, including the Ein Harod River bordering the Jezreel Valley and the Alexander River near Netanyah. JNF led a joint effort between Israel and the Palestinian Authority to restore the severely polluted Alexander River, which runs through Jewish and Arab towns. Currently, JNF is embarking on a major program to rehabilitate the Yarkon River running through Israel's largest population center.

Wetlands Technology

- JNF will utilize wetlands technology to purify waste water at the Ramon Air Force Base in the Negev Desert. The existing intensive waste water treatment plant at the base requires a well-trained maintenance crew and demands an expensive budget. Today, the plant can no longer treat the amount of sewage that the base manufactures and must be upgraded.
- JNF will build a unique system of constructed wetlands to purify the base's waste water. An environmentally sound method, constructed wetlands duplicate the physical, chemical, and biological processes that occur in the unique ecosystem of natural wetlands—where water, plants, animals, microorganisms, sun, soil, and air interact to remove contaminants from waste water.
- In addition to treating waste water, the wetlands will irrigate the 7.5-acre Ramon Park, built by JNF to improve the quality of life for the pilots and families who live there.
- This extensive system, the first of its kind in Israel, will be a model for sewage solutions for others army bases and small communities in Israel that are far from the main national sewage system, and will save tremendous amounts of water.

Rainwater Harvesting Program

- JNF also works to educate children in Israel about the water crisis in the Middle East. The Rainwater Harvesting Program, developed by Jerusalem teacher Amir Yechieli, has already been implemented in 10 schools in Jerusalem. Runoff water is collected on school rooftops, held in tanks, and used for flushing toilets, cleaning, and irrigation. During the rainy season, the program supplies up to 95% of the water consumed by a school.
- Students are involved in the planning and management of this system in their schools, which teaches them about conservation and their role in helping alleviate Israel's water crisis.

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