

Spring Freedom: Israel's Water Independence

As we welcome the spring and prepare to celebrate Passover with our families, we are reminded of the challenges the Jewish people have overcome throughout history. Miriam's Cup, placed by some on the Seder table, is a symbol of Miriam's Well, the source of water for the Israelites in the desert.

While Miriam's Well is said to have been a magical source of water for the Israelites, the modern state of Israel wasn't blessed with such a miracle. Even decades after its founding, the Jewish state faced severe water shortages as a result of its natural, desert environment. Its water supply was entirely dependent on rainfall, posing challenges during periods of drought.

Israel's challenge with water security continued until 1999, when the National Infrastructures Ministry implemented an emergency plan to address water usage nationwide. The result was the Regional Seawater Desalination project – a framework to construct Israel's first desalination plant.

The first major desalination plant opened in the Ashkelon in 2005. In only a decade, four more large-scale seawater desalination plants have been constructed. Today, desalination produces approximately 40 percent of Israel's water supply, helping to make Israel water independent from rainfall.

The newest plant, called Sorek, opened in late 2013. Located just south of Tel Aviv, it is the world's largest modern seawater desalination plant. Built for the Israeli government by Israel Desalination Enterprises, or IDE Technologies, at a cost of around \$500 million, it uses a conventional desalination technology called reverse osmosis. Thanks, however, to a series of engineering and materials advances it produces clean water from the sea cheaply and at a scale never before achieved.

"This is indeed the cheapest water from seawater desalination produced in the world," says Raphael Semiat, a chemical engineer and desalination expert at the Israel Institute of Technology, or Technion, in Haifa.

Wanting to share its knowledge, Mashav, Israel's Agency for International Development Cooperation, has hosted environmental professionals from all over the developing world—including Myanmar, Thailand, Cameroon, Ghana, Guyana, Bolivia, Nepal, Serbia, Bosnia and China, among others—to learn about best practices in water management, including desalinization. Representatives from these varied nations come to the Jewish state to learn how they too can turn their countries from water scarce to water independent.

Today, Israel has a surplus of fresh water, and is actively exporting its desalination expertise to other communities. Its water independence is a world ahead of the days of Miriam's Well and a model for the rest of the world.