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 THE UNIVERSITY OF ARIZONA®
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Q & A with Raanan Adin, CEO, Adin Holdings Ltd.

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Raanan Adin, CEO of Adin Holdings Ltd. (adinholdings.com), an Israeli international water consulting and solutions company, met at the WRRC on November 22, 2013 with more than a dozen invited guests interested in commercializing water technology for a presentation and roundtable discussion. WRRC Director Sharon B. Megdal invited Adin to Tucson after meeting him in October at WATEC, a water technology exhibition and convention in Israel. Roundtable guests included representatives from local start-up companies, the City of Tucson, and UA's Tech Launch Arizona and Research Parks. Adin spoke about technologies such as desalination and wastewater reuse that have significantly increased water resources in Israel and how new technologies can help ensure future water safety and security. Adin also described how innovation is nurtured from idea to commercialization and presented several forms of technology incubation, with various case studies of start-ups in the water arena.

In your presentation, you provided background on Israel and where you get your water. What would you say is the state of Israel's water?

The main water resources of Israel in its early years were surface water, which are lakes and rivers, and groundwater. Yet the location of the largest surface water resource, Lake Kinneret [Sea of Galilee], is far from the main population centers. To overcome this, Israel built its first big water project, called the National Water Carrier, that connected Lake Kinneret and major aquifers to Central and South-Central Israel. It started operating in 1964 and enabled the growth of the population in Tel Aviv and vicinity. This is the main commercial center of Israel, where there are more than 2 million people out of 8 million in the country. It also increased water quotas for agriculture in the southern, arid parts of the country.

Israel's rapid population growth required more water than the natural water resources could provide. This drove the development of new water resources—treated wastewater and desalination. The largest wastewater project takes 160 million cubic meters (MCM) of treated wastewater from the Tel Aviv metropolitan area (Dan Region), treats it to the highest quality standard, and pipes it to the dry south of Israel—the Negev desert—for agricultural irrigation. Population has continued to grow rapidly and reuse of wastewater has reached 80 percent, the highest in the world. In addition, a series of years of drought led to fast decision-making by the government, which resulted in a national desalination plan. From 2014, about 600 MCM per year of water are supplied by large reverse osmosis desalination plants along the coast of the Mediterranean Sea and many smaller inland ones. Almost 500 MCM per year are supplied by treated wastewater, and the rest of the current demand of 2,100 MCM per year is satisfied by the natural resources.

What do you think the main challenge is to water in Israel?

Israel is not fighting water scarcity anymore. There is enough water—enough good quality water, even to supply its neighbors. The challenge is to manage it optimally in a sustainable way considering cost, energy, climate change and impacts on the environment. There are several other issues articulated in Israel's long-term master plan for water, including returning some water back to the environment—parks, rivers and groundwater. Continuous improvement in water governance is always needed.

What roles do water innovation and technology play?

Innovation and technology are a response to Israel's need to supply water to people and agriculture in the desired quantity, quality, location and time. This has not changed. Innovation and technology will continue because we always want to do things more effectively. Part of the value of desalination, for example, is that the water is generated in Israel very close to the populated areas along the coast. The result is that energy of transporting it from the desalination plant to the populated areas is smaller than bringing it from Lake Kinneret. In addition, the use of novel technologies enables energy recycling in the plants. This compensates for some of the cost of energy spent in the process of desalinating. The water industry in Israel wants to continue growing, so it must innovate non-stop in order to sustain itself, for application in Israel and export to the world. To realize this, innovation is treated as a continuous process from idea to commercialization. Israel's authorities, academic institutions and commercial companies team up to nurture a practical innovative atmosphere, with results well known.

How are water in Israel and water in Arizona similar? What do you think Arizona can learn from Israel?

Basically, water scarcity is something that Arizona and Israel have in common. We both have more demand than supply by nature, which forces us to generate new water sources. So in Israel, it is wastewater reuse, which is also done in Arizona. From what I understand, it is done but can be done much more.

As to desalination, there is no sea in Arizona, yet the possibility exists to desalinate brackish groundwater. Some of the groundwater in Arizona has high salinity and would require desalination. Desalination of wastewater is also becoming an option. This is a technology that we can share. The issues of water transport are very similar. Where we have Lake Kinneret, Arizona has the Colorado River, which is not very close to the populated area. Therefore, there is a water carrier in Arizona that operates similarly to the National Water Carrier in Israel.

The roundtable was primarily about how to commercialize ideas in order to help us address our challenges. Obviously, it makes sense to discuss these things together—Israel and Arizona—because eventually we're talking about similar types of problems and similar types of solutions.

I believe that learning more about Israel's innovation, product development and commercialization programs will nurture such roundtable discussions in Arizona to find the best ways to implement such programs in your country. I believe we can nurture these processes and generate more ideas or more ways to implement good methodology that will work better here.

What do you think the future holds for water?

First of all, let's talk about the main trends that we're experiencing. The main trend that is leading the needs of the water industry is urbanization. Urbanization poses big challenges in bringing water to a populated area, water that needs to be generated or transferred from elsewhere. It requires handling the wastewater more effectively. Both supplying the water and wastewater and treating them require energy; this is the water-energy nexus. In most of the urban areas, we see new neighborhoods built around a very old city, telling us that the basic system is very old infrastructure. In some cases it's historical, so we sometimes need to find ways to live with that old infrastructure. There are technologies for dealing with that as well. The whole system turns more and more complex as the city expands, requiring more sophisticated water management—a holistic management.

Integrative multidisciplinary work, as done in the WRRC, and international collaborations, such a roundtable event as one example, are necessary methods of work and organization that enable optimal access and use of knowledge for attending to the evolving reality in water.



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