



# ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

Events-News-Politics-Projects-Environment-ClimateChange-Neighbourhoods-Cooperation-Disputes-Scarcity and more



**ORSAM WATER BULLETIN**  
*13 December 2016 – 19 December 2016*

**Borrowing amount for water projects approved**

How much to borrow for water projects is what the Palestine City Council debated earlier this week.

Of the two projects, the Water Filter Project is a mandate from the Department of Environmental Quality, so the city wants to do this before starting on the Water Meter Project to avoid fines.

Public Works Director Tim Perry asked the council's permission to borrow \$1.5 million for the projects.

“We want to bring back the best buy for our buck,” he said.

The water filter project will cost between \$800,000 and \$900,000.

Councilman Joesph Thompson wondered why the city would want to borrow more than what is needed.

Perry's thought was to get the “ball rolling” as they waited.

Mayor Bob Herrington also expressed a concern with borrowing more than what is immediately needed.

“We have to live by our means,” he said.

The Water Filter Project has to be the top priority before the Water Meter Project can begin, he said. Perry agreed with that statement.

Councilman Steve Presley believes the costs or interests on borrowing more will remain the same regardless of the amount borrowed.

Thompson disagreed and questioned why the city would be OK with paying \$4,000 to \$5,000 a month in interest on money that may not be used.

“If you are going to borrow money (we don't need), you are going to throw dollars away by doing this,” he said.

Assistant City Manager Mike Hornes told the council it's going to cost more than \$1.5 million for the water meters.

“Why borrow money that you will not need for several months?” Thompson asked.

Presley understood Thompson's concern, but said, if he was a businessman, he would never borrow more money than needed because of the interest costs, but cities, as government entities, are handled a little differently.

The council voted 6-1, with Thompson in opposition, on the \$1.5 million financing.

The motion to hire KSA to be the engineer for \$45,000 for the water meter replacement project passed unanimously.

13/12/2016 online at: [http://www.palestineherald.com/news/borrowing-amount-for-water-projects-approved/article\\_a938c636-c190-11e6-88dc-339cfd4d044b.html](http://www.palestineherald.com/news/borrowing-amount-for-water-projects-approved/article_a938c636-c190-11e6-88dc-339cfd4d044b.html)

### **Israel Set to Double Annual Water Supply to Parched Kingdom of Jordan**

Israel's national water carrier will lay the groundwork next month for a pipeline that will double its annual supply to Jordan, whose limited water resources have been under increased strain in recent years due to an influx of Syrian refugees, the Israeli financial website Globes reported on Wednesday.

Mekorot's new pipeline will extend from Lake Kinneret (Sea of Galilee) and provide Jordan with 100 million cubic meters of water annually, roughly doubling the kingdom's current allocation. The 5.5 km pipeline, which was approved by Israel's Supreme Court, will mainly pass through agricultural lands in the Jordan Valley.

The arrival of over 650,000 Syrian refugees has exacerbated a severe water crisis in the Hashemite Kingdom, one of the world's most arid countries, making the arrangement between Israel and Jordan more critical than ever. The deal is part of a broader water-sharing agreement that the neighboring countries signed in February 2015, which also commits Jordan to building a desalination plant in Aqaba and selling Israel a portion of the potable water it generates there.

In Jordan's Economy Was Always Shaky. The Refugee Crisis Has Only Made Things Worse, which was published in the December 2016 issue, David Schenker explored the variety of challenges facing Israel's eastern neighbor as it contends with the presence of Syrian refugees.

14/12/2016 online at: <http://www.thetower.org/4298-israel-set-to-double-annual-water-supply-to-parched-kingdom-of-jordan/>

### **Nevada and Israel Sign Water Deal in First-of-its-Kind Agreement Between a US State and Mid-East Country**

Nevada and Israel signed a memorandum of understanding on water-use innovation, marking what is reportedly a first-of-its-kind collaboration agreement between a U.S. state and a Middle East country.

The deal—reached between Nevada's WaterStart public-private joint venture and Israel's National Technological Innovation Authority at Monday's BusinessH2O Summit, a one-day conference in Las Vegas organized by the U.S. Chamber of Commerce—paves the way for

Israeli water technology companies to eventually set up research and production facilities in the notoriously arid state of Nevada.

“Our private sector needs to partner with water-advanced countries like Israel to adopt new technologies and best practices in water management, which will help create jobs and grow our economy,” said Myron Brilliant, executive vice president and head of international affairs for the U.S. Chamber of Commerce, the Las Vegas Review-Journal reported.

The Israeli-American Coalition for Action (IAC for Action), a non-profit that advocates to policymakers on behalf of the Israeli-American community, said the memorandum of understanding “provides new opportunities for cooperation that will benefit both Nevada and Israel by broadening and deepening research and development collaboration in the critical area of water management and conservation.”

“From our inception a year ago, the IAC for Action has been engaged in facilitating partnerships between Israel and state and local governments,” said IAC for Action Chairman Shawn Evenhaim. “We will continue to work in Nevada and around the country to strengthen the U.S.-Israel relationship by identifying opportunities for both Americans and Israelis to tap into each other’s tremendous wealth of innovation and expertise.”

14/12/2016 online at: <https://www.breakingisraelnews.com/80163/nevada-israel-sign-water-deal-first-kind-agreement-state-middle-east-country/#weQyvm3XE2TbbuOl.97>

### **Iranian official warns against water crisis in capital city**

A city council official has expressed concerns over the growing population and declining water resources in the Iranian capital, Tehran.

Mehdi Chamran, the chairman of Tehran City Council, has said that the capital city suffers from water shortage while the officials are incapable of addressing the needs of the citizens, Iran's Young Journalists Club website reported.

The population of Tehran City has already reached 14 million, he added.

The official described issuing permissions for construction of new buildings in the largest Iranian city as well as migration from rural areas to the capital city as the main reasons for the emerging trouble in Tehran.

He further said that a parliamentary committee is expected to be set up to discuss the urban issue.

Air pollution is another threat to Tehran as it is among the most polluted cities across the globe.

14/12/2016 online at: <http://en.trend.az/iran/society/2697984.html>

### **UK government underpins water works in Iraqi Kurdistan**

UK water engineer Biwater has won a \$1.2 billion contract from Kurdistan Regional Government (KRG), Iraq, to deliver new and upgrade water projects in the region.

The project is underpinned by a \$34.8 million loan facility from UK Export Finance to KRG, covering up to 12 months' development work, including all relevant site surveys, social and environmental impact assessments, and detailed designs.

Biwater's contract covers a 600,000 m<sup>3</sup>/d capacity water treatment plant at Erbil, fed by the Greater Zab River, to provide drinking water to the city; and at Sulaimani, new wastewater treatment works and sludge treatment facilities, and an upgrade to existing water treatment plant Dukan 1.

The Erbil works also include new water storage reservoirs for 320,000 m<sup>3</sup>, dual transmission mains, pump stations, and two ring mains.

"We have delivered many large, global water projects, including turnkey solutions throughout the Middle East. This contract is a landmark in providing technological and financial solutions to address the complex, water-related challenges of this region," said Biwater chairman, Adrian White.

"We hope that this initial loan will pave the way to attracting finance for the next stage of this important project," added Kurdistan's Prime Minister, Nechervan Barzani.

14/12/2016 online at: <http://www.desalination.biz/news/0/UK-government-underpins-water-works-in-Iraqi-Kurdistan/8625/>

### **Israel Recycles 90% of Its Wastewater, Four Times More than Any Other Country**

Almost 90 percent of Israeli wastewater is purified and used in irrigation, making it an undisputed world leader in this field, Haaretz reported on Sunday, citing a new report by the country's Water Authority. Spain, the second-place country, recycles 20 percent of its wastewater, compared to Israel's 87 percent.

Israel is also a pioneer in desalination, operating Sorek — the world's largest seawater desalination plant — some 10 miles south of Tel Aviv. While desalination can be energy intensive and expensive enterprise, the advanced technologies employed at Sorek allow it to produce a thousand liters of drinking water — about what one person in Israel uses in a single week — for 58 U.S. cents.

Israel aims to produce 200 billion gallons of potable water annually through five major desalination plants by 2020, and has shared its expertise in the field to help address water shortages globally, from Egypt to California.

In How Israel Is Solving the Global Water Crisis, which was published in the October 2015 issue of The Tower Magazine, Editor David Hazony offered a brief history of how Israel came to lead the world in recycling wastewater.

But Israelis have led the way in another revolution in water technology: The recycling of waste. Now, you probably don't want to hear about how what goes out through our toilets can be reused to grow carrots, but listen carefully anyway. When gritty New Yorkers take a shower, the runoff ends up in the East River. In Washington, D.C., a rainstorm hits the streets and washes away all the dirt and garbage and spilled beer and political bile into the sewers, and from there it all ends up in the ocean. American wastewater is treated minimally to prevent environmental damage. In some countries it's not treated at all, polluting rivers and oceans.

In Israel, however, fully 85 percent of that highly purified sewage gets reused for agriculture. Another 10 percent is used to increase river flow and fight forest fires. Only five percent is released into the sea. The country with the second-highest use of recycled water is Spain. They recycle about 25 percent.

Like the others, this Israeli innovation long predates the dotcom era, going all the way back to the 1950s. Understandably, farmers were a bit squeamish at first about using sewage for food production, and a huge amount of work had to go into figuring out how to keep both the food and the sources of fresh water—some of them in aquifers beneath the farms—free of toxins. The big breakthrough came in the 1970s, when seven municipalities in the Tel Aviv area experimented with pumping wastewater into sandy dunes about eight miles south of the city. The sand, it was hoped, would act as a natural filter, directing the water over time into a nearby aquifer. It worked. The treated water (known as “effluent water”) was pumped further south, where it is now used in agriculture. The natural process takes about six months to a year, but what comes out the other end is nearly fresh, usable for anything but drinking.

By the 1990s, Israel had built a vast series of treatment facilities and a reservoir infrastructure capable of treating, storing, and delivering reclaimed water from the sewage of nearly every municipality in the country. “Reclaimed water transformed Israel's water profile,” Siegel writes. “And no less than with the role of drip irrigation and specially bred, drought-resistant seeds, the comprehensively treated sewage water changed the agricultural landscape, permitting Israel to feed itself and to be an agricultural exporter of significance—whether in years of rain or scarcity.”

Today, nearly half the water used for agriculture in Israel comes from highly treated waste.

15/12/2016 online at: <http://www.thetower.org/4305oc-israel-recycles-90-of-its-wastewater-four-times-more-than-any-other-country/>

### **Over 400,000 people including displaced receive clean water in Baghdad thanks to generous funding from Japan**

The United Nations Development Programme (UNDP) and the Governorate of Baghdad have completed the rehabilitation of the primary water supply infrastructure in Al Nahrawan District, where water shortages and lack of clean water have exposed displaced people and the host community to the risk of waterborne diseases.

Thanks to generous funding from the Government of Japan, over 400,000 people are now receiving safe drinking water, including 30,000 displaced people from Anbar and Diyala Governorates hosted in Al Nabi Younis camp and surrounding villages.

Governor of Baghdad, H.E. Mr. Ali Muhsin Al-Temimi, said: “We are extremely grateful to UNDP Iraq for its support to implement this significant project which serves the citizens of Al-Nahrawan and surrounding areas. We also highly value the Government of Japan for funding the project.”

Director of Water, Mr. Ra’ad Khairi Abdullah, echoed the Governor’s comments, adding: “We are so pleased to see the new water pumping system improve water delivery during this difficult time.”

UNDP’s Iraq Crisis Response and Resilience Programme (ICRRP) and the Directorate of Water, Baghdad Governorate, have upgraded the main water treatment plant in Al Nahrawan through the provision and installation of water treatment equipment and pumps. This has significantly contributed not only to increasing supply, but also to improving the quality of water to prevent potential future outbreaks of water-related diseases.

ICRRP’s National Area Coordinator, Mr. Haiz Abdullah, noted: “At a time when so many families are suffering the consequences of the crisis in Iraq, the biggest burden is shouldered by communities and local governments. We are very pleased that we can support the Governorate of Baghdad to meet the increasing demands of displaced people and host communities for essential basic services. We are confident that hundreds of thousands of people will be able to improve their lives.”

UNDP’s ICRRP provides fast-track support to vulnerable families in newly liberated cities and villages where social tensions threaten community cohesion. ICRRP is currently active in eleven newly liberated communities in Diyala, Salah al-Din and Ninewah Governorates, and is expected to expand to nearly 30 locations in the months ahead. ICRRP is designed as a resilience and recovery programme to help families withstand the multi-dimensional shocks associated with post-liberation and large-scale returns.

18/12/2016 online at: <http://reliefweb.int/report/iraq/over-400000-people-including-displaced-receive-clean-water-baghdad-thanks-generous>

### **Gaza Water Crisis Has Caused Irreversible Damage, World Bank Warns**

Irreversible damage has already been done to parts of the Coastal Aquifer in the Gaza Strip as a result of overpumping and seawater seepage, according to a senior water-sanitation specialist at the World Bank.

The financial institution is one of many local and international organizations that have been warning against, and trying to prevent, such an occurrence over the past 20 years.

“Ecologically speaking, the damage to the aquifer is getting worse, and studies have been showing a steady increase in water salinity,” said Adnan Ghosheh. This brings the Gaza Strip

closer to the situation the United Nations predicted in 2014: that it will be unfit for human habitation by 2020.

As a way of expressing once again the urgency needed to rectify the situation, the World Bank issued a press release earlier this month, following which Haaretz interviewed Ghosheh.

Most of the information in the press release is not new. It notes that while 90 percent of the inhabitants of the West Bank and 85 percent of the inhabitants of the Middle East and North Africa have access to a faucet for drinking water, only 10 percent of the 2 million or so inhabitants of Gaza can safely drink the water piped into their homes. The other 90 percent do not even associate drinking water with the simple act of turning on a tap: Their water is too saline because of seawater seepage, and too dangerous because of raw sewage or gray-water seeping into the aquifer.

“The people in Gaza are not able to use the water coming into their houses for drinking; they use it for household ends, but for drinking they have to rely on trucks,” Ghosheh said in the press release. “There are some 150 operators who provide some kind of desalinated water that has been filtered to make it acceptable for drinking and for cooking. It’s more expensive” than tap water, he added, and from a hygiene perspective is neither safe nor up to the standards of water suitable for drinking.

Problems related to the polluted water and abstention include intestinal diseases, stomach bugs, a high disease rate among children, rashes and other ailments. A few Gazans can afford to assemble a water-treatment facility in their home, while others buy purified water to at least wash their children – but there aren’t many who can afford that in the impoverished Gaza Strip.

The World Bank says the reason for the drop in the aquifer’s water level is due to overpumping because of population growth. The press release does not address the basic fact that Israel controls the water both in its sovereign territory and in the occupied territories, and does not recognize the principle of equitable distribution of water between the two peoples.

The water arrangements imposed on the Palestinians in the Oslo Accords treat the Gaza Strip as an autarkic water economy. That is, the 2 million inhabitants of Gaza have to suffice with the identical portion of the Coastal Aquifer that had the same capacity of water for approximately 270,000 people in 1949 (200,000 refugees and the rest original inhabitants).

The annual amount of water yielded by the part of the aquifer in the Gaza Strip is about 57 million cubic meters. The Oslo Accords didn’t consider the possibility that large quantities of water would be piped to Gaza from other places, just like they’re piped to the more arid areas within Israel proper. Instead, there has been overpumping for many years, which amounts to about 100 million cubic meters annually.

According to an annual Palestinian Water Authority report regarding the situation in Gaza, in 2015 the groundwater level ranged from 12 meters above sea level in the southeastern part of the Strip, to 19 meters below sea level in the Rafah area – which is considered the maximum rate of decline.

Ghosheh told Haaretz that, in his opinion, the fastest and safest interim solution is to bring more water into Gaza from Israel – although he also said this is only a temporary fix.

“I don’t understand why the two sides aren’t moving ahead toward this solution. Today, Israel provides” – that is, sells – “about 7.5 million cubic meters of water to Gaza annually. They are talking about increasing this amount to about 20 million cubic meters but we aren’t yet seeing any concrete steps in that direction – and even 20 million cubic meters isn’t enough. There has to be a discussion over much larger amounts” that Israel will sell to Gaza, he said.

But the World Bank – along with the European Bank for Reconstruction and Development and the Islamic Development Bank – is working mainly on a solution that the Palestinian Authority has adopted as part of its strategy: a large desalination plant, which, according to the plan, will provide about 55 million cubic meters annually; its estimated cost of construction is about \$500 million. Three smaller desalination facilities are already operating and providing about 4 million cubic meters annually – in addition to dozens of smaller purification companies.

There are differences of opinion among Palestinian water specialists regarding the desalination solution. Supporters are convinced that it will decrease Gaza’s dependence on Israel. Opponents, though, are concerned about the environmental damage; argue that the dependence will always exist with regard to the entry of building materials and replacement parts; and warn that, from a practical perspective, the inhabitants of Gaza will not be able to bear the costs by themselves (desalinated water is more expensive). In addition, the fact is that a facility of this sort requires a steady supply of about 25 megawatts of electricity – the source of which remains unclear.

There are also those who say the Palestinians mustn’t waive in their demand for an equitable allocation of the country’s water resources and, therefore, calling on Israel to compensate for the quantities of water it pumps from the West Bank for use by Israeli citizens and the settlers – by providing masses of water to the Gaza Strip.

Back in 2009, the World Bank published a report called “Assessment of Restrictions on Palestinian Water Sector Development,” which described in detail the unequal distribution of water resources in the West Bank. In response to a question about whether the latest press release is proof that the 2009 report failed to apply pressure on Israel to change its policy, Ghosheh laughed. “You ask hard questions,” he said, adding, “When you go to Gaza and see the situation, talk to the people and see how they are suffering, and then you go to a meeting at the office of the Coordinator of Government Activities in the Territories, or the donor countries or the Palestinian Authority, and try to explain, you understand that there is no correlation between the talk and the gravity of the situation.”

Now, says Ghosheh, the World Bank is preparing a new report that will focus on the possibility of repair options and greater efficiency within the Palestinian water economy. According to him, “There are things the PA can do – like, for example, efficiency. Before Israel started to desalinate water, it tackled reducing the loss of water in pipelines. About 38 percent of the water in Gaza gets lost.”

He agreed that Gaza has to negotiate for many long months with the Israeli security establishment over every bit of raw material or spare part brought into the Strip, but explained: “The study is done to provide recommendations not only to the donor countries, but also to the implementers,” referring to the Palestinian Water Authority and Palestinian local councils. “If we want to talk about water security, we need to talk about the Palestinian context as well,” he added.

Asked whether the focus on the Palestinian Authority could be seen as aiming for the easy target after the pressure on Israel failed to yield results, Ghosheh replied: “Indeed, the Palestinians are the weaker side in the equation and it is easier to achieve change with them. We are an institution for implementing development, not a political institution. They can make internal improvements. They understand this and are already making the changes.”

Has the World Bank given up on applying pressure on Israel to change its discriminatory policy?

“Our aim was never to be a mediator, but rather to support the Palestinian people. Our client is the Palestinian Authority, and we are giving it advice as to what is possible and what is impossible.”

In other words, your conclusion is that it’s impossible to change the Israeli policy with regard to the unjust and unequal distribution of water?

“You’re talking about politics, and that’s not my area.”

18/12/2016 online at: <http://www.haaretz.com/middle-east-news/palestinians/.premium-1.759600>

### **Qeeri workshop examines impact of desalinated water \***

Researchers from Qatar, Europe, Asia, and North America gathered in Doha to discuss the impact of desalinated water on public health at a workshop organised by Hamad Bin Khalifa University’s (HBKU) Qatar Environment and Energy Research Institute (Qeeri).

The two-day workshop produced valuable insight on the safety of desalinated drinking water, which will help guide public policy in Qatar and around the world.

The event, entitled “Quality of Desalinated Water from Human Health Perspectives,” was sponsored by Qeeri, Qatar National Research Fund (QNRF), and the University of Michigan’s School of Public Health. It featured a range of speeches, presentations, and panel discussions. In the sessions, attendees were given a multidisciplinary look at how desalination can be an effective means of producing drinkable water.

Ensuring the safety of desalinated water is increasingly vital as freshwater resources diminish and populations grow. HBKU’s research excellence and unique partnerships advance understanding of this important topic to help those who rely on desalinated water to live healthy, prosperous lives.

A diverse group of academics presented their original research at the workshop, including Prof Basem Shomar of Qeeri, an expert on chemistry of desalination technology, who surveyed the chemical composition of desalinated water and the public's perception of its safety.

World Health Organisation researcher professor John Fawell also spoke about safeguarding the complex systems that deliver desalinated water to people in countries where freshwater is scarce. Professor Nriagu of the University of Michigan expressed concern for the low mineral content of desalinated water in many countries and wondered whether such demineralised water can be a risk factor for chronic diseases.

Dr Basem Shomar said: "When we explore the topic of desalinated water, it is important that we not only think about the quantity but also consider what is clean and safe. The topics discussed at this workshop form an important element of the overall mission of Qeeri and reflect the multidisciplinary range of the work undertaken at the institute."

Another presentation talked about the water crisis in Flint, Michigan through the lens of Safe Drinking Water Act in the US. Referencing Flint, professor Chuanwu Xi of the University of Michigan demonstrated the importance of sound policy measures to prevent public health disasters.

Researchers affiliated with the National University of Singapore, University of Cologne, Qinghai University, and Carnegie Mellon University in Qatar also contributed to the workshop.

18/12/2016 online at: <http://www.gulf-times.com/story/525115/Qeeri-workshop-examines-impact-of-desalinated-water>

### **No end in sight in water row between India and Pakistan**

A simmering water dispute between India and Pakistan seems to be turning towards another boiling point as both sides continue to stick to their guns despite the World Bank's call to resolve the issue bilaterally, experts say.

While Indian experts insist the World Bank-brokered 1960 treaty was a huge mistake from the start since it allocated less water to India, Pakistani experts eye their neighbor's motives with suspicion, claiming the other side only wants to revoke a longstanding treaty to suit its domestic political agenda. Kashmiris, meanwhile, fear they may literally end up drowning if both sides don't deescalate tensions soon.

- Dispute over Indian dams

The main contention between the two nuclear neighbors is over the "Indus Water Treaty" that allocated three eastern rivers to India – Beas, Ravi and Sutlej – and three western rivers – Indus, Chenab, Jhelum – to Pakistan in 1960.

Islamabad is objecting to New Delhi's plans to construct two hydropower dams – the 850-megawatt Ratle and the 330-megawatt Kishanganga hydropower scheme -- on the Chenab River on the Indian side, saying the projects would adversely impact on the flow of rivers on its side.

The two countries recently initiated two separate processes under the treaty to resolve the dispute over India's threat to build the dams. However, on Dec. 12, the World Bank announced a temporary pause in the appointment of a neutral expert, as requested by India, and the chairman of the Court of Arbitration, as requested by Pakistan.

“Both processes initiated by the respective countries were advancing at the same time, creating a risk of contradictory outcomes that could potentially endanger the Treaty,” the bank said in a statement.

The bank's Group President, Jim Yong Kim, urged both sides to resolve the issue mutually instead.

“We are announcing this pause to protect the Indus Waters Treaty and to help India and Pakistan consider alternative approaches to resolving conflicting interests under the treaty and its application to two hydroelectric power plants,” Kim was quoted as saying in the statement.

"This is an opportunity for the two countries to begin to resolve the issue in an amicable manner and in line with the spirit of the treaty rather than pursuing concurrent processes that could make the treaty unworkable over time. I would hope that the two countries will come to an agreement by the end of January," he added.

- Pakistan to not accept 'any change'

Following World Bank's declaration to pause the processes, New Delhi announced it was ready to bilaterally resolve the dispute with Islamabad; however, Indian Foreign Ministry spokesman Vikas Swarup added that “these consultations should be given adequate time.”

Meanwhile, Pakistan's Special Assistant to the Premier, Tariq Fatemi, said his side will not agree to any changes in the treaty.

“Pakistan will not accept any modifications or changes to the provisions of the Indus Water Treaty. Our position is based on the principles enshrined in the treaty. And the treaty must be honored in letter and spirit,” Fatemi was quoted as saying by the local English daily, Dawn, on Saturday.

- Trust deficit

The demand for "adequate time" by the Indian side has alarmed Pakistani experts, who accuse New Delhi of using “time buying” tactics to its disadvantage.

Rabia Sultan, an expert based in the Pakistani city of Lahore, told Anadolu Agency that by insisting on more time India could complete its controversial dam projects during the consultation phase.

Sultan warned the construction of the two proposed dams may create water and food shortages in Pakistan.

“The construction of a gated structure on the upstream will give India an edge to manipulate and control the [Chenab] river, which may turn out to be very dangerous especially when the two sides are hostile to each other,” she said.

Also, the dams would hit Pakistan’s rice crops directly. “Chenab River is a major source of irrigation water for the area that is famous for its quality rice production. The construction of the two dams may cause water shortage in the area, particularly in low water season,” she said.

Central and southern parts of Pakistan’s largest Punjab province are famous for the production of the Basmati rice, which is also a major export item.

- ‘Blood and water’

New Delhi had threatened to stop honoring the Indus Water Treaty after a militant attack on an army base in Indian-held Kashmir left 19 Indian soldiers dead in September last. Senior figures in India accused Pakistan of sponsoring the attackers.

An emotional Indian Prime Narendra Modi had also warned "blood and water can't flow together".

India and Pakistan have already fought three full-scale wars in 1948, 1965, and 1971.

- ‘The Great Water Folly’

Indian experts such as Brahma Chellaney call the 1960 treaty "The Great Water Folly — one of the major strategic problems bequeathed to future Indian generations by the Nehruvian era."

Jawaharlal Nehru was India's first prime minister, who was in office between 1947 and 1964.

They claim the treaty had allegedly given an unfair share of rivers to Pakistan, while India received less than 20 percent of the total Indus waters.

In an opinion piece published in the Indian media outlet Hindustan Times, Chellaney said: “India’s naive assumption that it traded water munificence for peace in 1960 has backfired, saddling it with an iniquitous treaty of indefinite duration and keeping water as a core issue in its relations with Pakistan.

“As for Pakistan, after failing to achieve its water designs militarily in 1965, it has continued to wage a water war against India by other means, including diplomacy and terrorism. Put simply, 56 years after the IWT [Indus Water Treaty] was signed, Pakistan’s covetous, water-driven claim to India’s J&K [disputed Indian-held Jammu and Kashmir region] remains intact.”

- Kashmiris may ‘drown’ if treaty revoked

Kashmir experts on the Indian-held part of the disputed believe India's aggressive posturing over the changes to the water treaty is merely an attempt at arm-twisting Pakistan.

Shakil Ahmad Romshoo, head of the Earth Sciences department at the University of Kashmir, said: "Legally, it [water treaty] cannot be abrogated by one party, no matter what happens. India will have to approach the World Bank to abrogate the Indus Water Treaty, and the World Bank will appoint a bench of judges who will look into the matter.

“And since the reason for calls for abrogation of the treaty are not about problems and concerns of actual water sharing but about politics, World Bank would never agree.”

About the “illegal” option to stop the water from flowing into Pakistan without approaching the World Bank, Romshoo said at the moment India did not have the infrastructure to do such a thing. But if in the future it achieves such means, then Romshoo warned: “It would simultaneously mean the drowning of us in [Indian held] Kashmir. It will be a disaster for us in Kashmir.”

18/12/2016 online at: <http://aa.com.tr/en/asia-pacific/no-end-in-sight-in-water-row-between-india-and-pakistan/709089>

### **A fresh look at Israeli/Palestinian freshwater issues**

Economic growth and success depend on innovative and resourceful management of natural resources. In Israel and Palestine, among the world's most arid regions, where high population growth strains natural resources, finding ways to cooperate around water quality and quantity issues is imperative. Cooperation is essential for public health and safety from untreated sewage and agricultural runoff and to meet everyone's increasing needs for safe water.

Water quality and quantity depends on cooperation precisely because water flows without regard to political boundaries. Some joint management exists already between the Israelis and the Palestinians but it is not adequate to protect their shared waters. As elsewhere in the world, traditional theories of absolute territorial sovereignty and absolute territorial integrity will not effectively solve disputes over water use. Due to the complex and dynamic nature of water, more balanced concepts have emerged, including the concept of equitable utilization, which is based on the idea that while each state has a sovereign right over its water resources, it has to respect the correlative rights of other states.

In recent decades, international law has evolved around the idea of common management systems that take into account the varying interests and needs of the peoples who share water resources and build on their mutual interest in sustaining the quality and quantity of their shared water. In the end, everyone benefits more from working together than working alone to manage the shared water.

The non-profit organization EcoPeace Middle East has developed a structure for an Israeli-Palestinian water management agreement that, in line with the advancement of international water law, focuses on flexibility and resilience and includes mechanisms for raising and resolving conflicts on an ongoing basis. The desideratum is to create a system capable of achieving results that are equitable and address the interests of both peoples. This cannot be done when the right to water is simply allocated on a fixed and permanent basis. Not only is such an approach too rigid to meet the dynamic needs of all people in the region, but it also does not address the imperative need for everyone involved to share responsibility for preserving the quality of the water and properly managing waste material and pollution.

EcoPeace's proposed joint water management system represents an approach that can be economically efficient, socially and politically equitable, ecologically sustainable and practicably implementable. It provides a solid conceptual and practical basis for further negotiations. But the proposal is only the first step. Ahead lies the demanding task of putting meat on the bones and creating the level of predictability needed for political and public acceptance. That includes working out procedural details and elaborating substantive rules and principles that will guide joint decision-making on shared water issues. Specifically, more details are needed to clarify how priorities will be set and how compromise will be achieved and then enforced.

For example, the Palestinians and Israelis will likely bring different perspectives on the concepts of economic efficiency and social equitability to the table. While Israelis are likely to place more weight on economic factors and practicability, Palestinians may express a greater need for prioritizing social and political equitability. Ultimately, however, moving this proposal forward is important because both Israelis and Palestinians have equal interests in ensuring ecological sustainability and the protection of their shared water bodies.

Albert Einstein once said that "the significant problems we have cannot be solved at the same level of thinking with which we created them." The key to creating a lasting framework for cooperation, flexible enough to deal with all imaginable – as well as unimaginable – differences over shared water is new thinking. The proposal put forward by EcoPeace provides just that. With meaningful effort from both sides, the proposal can be a stepping stone for a long-term solution to water problems in the region.

19/12/2016 online at: <http://www.jpost.com/Opinion/A-fresh-look-at-IsraeliPalestinian-freshwater-issues-475876>

### **Farming Without Soil Seen as Solution in Land without Water**

Growing lettuce in the desert is not most people's idea of how to make a success of farming, but Amr Bassiouny believes he is on to something.

The 30-year-old chief executive of Egyptian Hydrofarms says he is growing salad greens at his farm on the outskirts of Cairo using 90 percent less water than traditional methods, and at the same time obtaining better yields.

"This is important in Egypt because we have scarce water resources, so you're able to grow large quantities with much less use of resources," he told Reuters Television.

Hydroponics is farming in water instead of soil. Bassiouny places his plants in pipes through which water and nutrients are pumped.

Egypt's population of more than 90 million is growing, and agricultural land is shrinking due to illegal construction on the fertile banks of the Nile and its delta, the country's breadbasket.

Unlicensed construction picked up pace after the 2011 uprising, with the government estimating that 90,000 acres (36,400 hectares) of farmland were lost in the first three years alone.

"We will be forced to move our farming to the desert, and when we move to the desert, we will either use up all the available water, so in 40 or 50 years we won't have any more water and we will not be able to farm.

"Or, we can start looking for ways of growing larger quantities by using the least amount of our resources as possible," Bassiouny said.

Some say hydroponics was used as far back as the Hanging Gardens of Babylon, one of the seven wonders of the ancient world. That theory is unproven, but hydroponics adherents believe the technology has stood the test of time.

Though costlier, hydroponics is attractive for present-day Egypt, much of which is arid and unsuitable for traditional farming.

Bassiouny hopes to start exporting to the Middle East as water shortages get worse and traditional farming becomes more difficult.

"Even today, the water in desert wells is becoming too salty and unsuitable for farming. So we need to find alternative methods of farming, especially since we won't just be feeding ourselves, but we will also be exporting to other countries."

Chief Commercial Officer Adel Shentenawy, 32, said he had launched a social media campaign to explain the benefits of hydroponics.

"Hydroponics isn't a new idea, it's been around since the time of the Pharaohs ... All we did was take this idea and added technology, efficiency and productivity."

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**Investing in water around the Mena region**

There is a looming water crisis that is beginning to manifest itself in very serious ways across North Africa and the Middle East (Mena) regions. The general public seems oblivious to the threat and national ministries often seem to be looking the other way, but the data is there now: According to Nasa, we are experiencing the worst drought in 900 years as mentioned by Princess Sumaya of Jordan at the opening of the first Amwaj ('waves' in Arabic) forum in Amman on 28-29 November about advancing sustainability and entrepreneurship around the Mena region.

The Mena region is the most water-scarce region in the world. Water availability per person per year has declined sharply over the last 50 years and is today a tenth of the average global water availability. In Jordan, water availability declined from 3,600 cubic metres per person/year in 1946 to 128 cubic metres today.

This is a drastic and worrying decline and yet many people in the Mena region remain unaware of the water crisis — of its causes, its long-term impacts and why certain viable solutions are not being implemented. What are some of the solutions?

On a big scale (starting with at least \$100 million [Dh367.3 million]), "PPPs are on the rise and come in many forms", stated Koussai Quteishat, former Jordanian Minister of Water, at the second UfM Regional Conference on Governance & Financing for the Mediterranean Water Sector in Tunis on December 5-6.

"PPPs are complex structures that only work in specific circumstances," claimed Marcos Martinez from the European Bank for Reconstruction and Development (EBRD) who gave two PPP success stories: The As-Samra Wastewater Treatment Plant in Jordan and the New Cairo Project in Egypt.

Incidentally, at the Amwaj forum in Amman, Revolve led a field trip to As-Samra WWTP in partnership with the Millennium Challenge Corporation (MCC) to show young professional journalists, researchers and policymakers how the 'complex structure' works.

As-Samra channels the 'grey' (sewage) water from Amman towards Zarqa. The natural gradient gravity flow turns a turbine that generates electricity to power the Jordanian capital. The waste water is then treated and sent on for irrigation purposes in the agricultural fields around Zarqa.

The complexity arises in the financial meanders of the PPP: As-Samra consists of a grant from the US government, a loan from a consortium of banks via the Arab Bank, and the As-Samra Project Company that is paid for its services by the Jordan Ministry of Water for the provision of 'clean' water.

It's all about clean water; about how to provide it to more and more people; and who provides it at what cost and price. Just as the "final objective of PPPs is creating positive social impact", as mentioned by Quteishat, so the reform of the water sector is meant to benefit society at large.

According to Bruno Denis from the European Investment Bank (EIB), €1.5 billion (Dh5.75 billion) was invested in southern Mediterranean countries in 2015, 10 per cent of which went to water and sanitation projects. And there remains a colossal need to revamp ageing infrastructure that suffer from disrepair and leakages.

Irrevocably, this will mean involving the private sector more. “This does not mean the privatisation of water services,” stated Marie-Alexandra Veilleux-Laborie of EBRD Tunisia. It means helping authorities provide better basic water services, such as potable water to its citizens at an affordable price.

Investing in water is a massive long-term endeavour. It involves upgrading thousands of kilometres of tubes and pipes, but ultimately it means improving environmental standards, and in the process, it has the tremendous potential of creating many.

Coined by the Global Water Partnership (GWP) — Mediterranean, we are seeing the emergence of a new nexus that revolves around addressing the pressing need to provide water security to southern Mediterranean populations to slow migration flows to Europe by creating more employment.

The Mediterranean water challenge is a Malthusian trap: with rampant population growth and depleting resources, demand is now outpacing supply; plus political instability, neighbouring conflicts, general job malaise, prolonged droughts across the Mena region and everyone seems to be waiting for the rain.

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