



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
06 December 2016 – 12 December 2016

Iran's empty words on Straits of Hormuz

For those who savour the confluence of geopolitical affairs and modern history, the significance of the Straits of Hormuz will not have gone unnoticed. And for those who live in the Gulf, its strategic importance cannot be understated. For decades, the narrow gap of water between Oman and Iran was the key waterway through which most of this region's crude production flowed in a procession of tankers to storage facilities, refineries, ports and the global marketplace.

For all of its strategic importance, the Straits of Hormuz was a bottleneck that Iran, in its narrow-minded pursuit of influence, irritation and isolation, targeted in acts of desperation and revolution.

And as long as Iran threatened, there was little option but to ensure that its sabre-rattling words were met by a force that negated its verbiage. For too long, this region and its critical energy exports were held as potential hostage to Tehran whims.

Earlier this week, in an interview with WAM, His Highness Shaikh Hamad Bin Mohammad Al Sharqi, Supreme Council Member and Ruler of Furairah, highlighted the strategic and important paradigm shift that has occurred as a result of the completion of the Habshan-Fujairah oil pipeline.

This pipeline now allows oil to flow overland to the port on the Arabian Sea, bypassing the bottleneck. An estimated 70 per cent of the UAE's oil exports can be transported now through the pipe, and it will have the potential to take all of the region's production.

In effect, the perennial threat coming from Tehran to choke the Straits no longer holds any water — with a bold strategic stroke, Iran has moved from importance to impotent.

06/12/2016 online at: <http://gulfnews.com/opinion/editorials/iran-s-empty-words-on-straits-of-hormuz-1.1940393>

Syrian Civil War Has at Least One Ecological Bright Side

The bloody civil war in Syria has had a number of unintended environmental side-effects, one of which was revealed last week: A steep reduction in agricultural activity in the southern part of the country. As a result, farmers have used much less water from natural sources and much more water now flows in the Yarmouk River, the largest tributary of the Jordan River. This means much greater quantities of water are reaching the parts of the river that flow through Jordan, and later reach Israel too.

An article published last week in the Proceedings of the National Academy of Sciences of the United States shows how the use of imagery from the Landsat 7 satellite to study agricultural

land and water use in southern Syria showed the increased flow of water to Jordan, one of the world's most water-poor nations, and "illustrates that conflict and human displacement can significantly alter a basin's water balance with dramatic effects on the transboundary partitioning of water resources."

The Syrian government developed a series of 21 dams in the Yarmouk drainage basin to divert water into large reservoirs used for irrigation of agricultural land. Jordan built a large dam of its own on the Yarmouk, the AL-Wehda (Unity) Dam, to exploit the water for its own agriculture, but in previous years the amount of water it collected has fallen as Syria dammed the river upstream. While the Yarmouk flows into the Jordan River, most of its water has been used in Syria and Jordan before reaching the river.

Since the civil war broke out in 2011, hundreds of thousands of refugees have fled the area of southern Syria, many of whom were farmers. Most fled to refugee camps in Jordan.

The remote sensing data shows how the area of irrigated cropland has dropped by almost 50 percent since 2012, though almost no change has been seen in the level of irrigation just across the border in Jordan – a clear sign the cause is the mass exodus of refugees from Syria.

The increase in flow in the Yarmouk is critical for Jordan, which has one of the worst water shortages in the world. Yet these increased amounts are still less than the quantities of water the country was promised in past agreements it signed with Syria.

One of the solutions for Jordan in the coming years is to receive more water from Israel, which could come from Lake Kinneret (the Sea of Galilee). Israel and Jordan have already agreed that Israel will provide Jordan with an additional 50 million cubic meters of water a year, in addition to the same amount it already supplies to Jordan every year since the peace agreement between the two countries was signed over 20 years ago. Israel recently approved a plan for the pipeline to transport the water from the Lake Kinneret area to Jordan.

The Yarmouk River mostly flows into the King Abdullah canal on the Jordanian side of the Jordan Valley, and mostly is used for agriculture in the area. A smaller amount of water from the Yarmouk enters the Jordan River near Naharayim, meaning the impact of the Yarmouk on the Israeli or Palestinian water supply is minimal.

online at: <http://www.haaretz.com/middle-east-news/jordan/.premium-1.758168>

Rivers are overflowing around Syria because there's no one to use them anymore

The Syrian civil war has displaced millions and left a once prosperous industry in ruin. In many parts of the war-torn country, few people still have a job and farm lands are left to themselves. It's enough to talk to any Syrian refugee to get a feel of the putrid state of affairs in their country. And if you don't believe them, you're free to study objective proxies like satellite imagery and data. One recent study, for instance, found many of Syria's once shallow

rivers are now overflowing because irrigated agriculture is now almost non-existent, thousands of miles of pipeline are severed, and cities are empty.

Since 2008, when the situation in Syria started to get very hot, the Jordan River has swelled to three times its regular size. The river runs through Israel, Jordan, and Lebanon, however, Syria had built many reservoirs that capture water from Jordan River tributaries which cross the country. These neighboring countries are now benefiting from having more water resources at the expense of a whole nation. There are millions of Syrian refugees living in camps in Jordan, though, and this extra water will certainly help these unfortunate people.

According to the study's authors, about half of the Jordan river's swelling can be attributed to war, while the other half is due to natural recovery following the years of drought which preceded the war. Some believe that this drought, which is actually less severe than the Californian one, was one of the contributing factors to the war.

These effects were studied using satellite imagery and the study is among the first to analyze watershed regions in war zones. The Stanford researchers looked at composite satellite images of the 11 largest Syria surface water reservoirs. Water management and land use on the Jordanian side of the Yarmouk basin and Israel's Golan Heights — areas where there is no refugee crisis — served as baselines to assess the toll of war on the environment.

“The water management practices in Syria have changed and that's visible from space,” said study co-author and principal investigator Steven Gorelick, the Cyrus Fisher Tolman Professor in Stanford's School of Earth, Energy & Environmental Sciences. “The Syrian crisis has resulted in a reduction in agricultural land in southern Syria, a decline in Syrian demand for irrigation water and a dramatic change in the way the Syrians manage their reservoirs.”

It's believed Syria's reservoirs now store 49 percent less water. Concerning land use, Syria's irrigated land in the Jordan river-Yarmouk basin is down by 47 percent.

“In the past few years, there's been increasing focus on how climate change and drought influences conflict, but there hasn't been as much research on how conflict can actually lead to impact on the environment and water resources,” said study co-author Jim Yoon, a PhD candidate in Earth system science at Stanford.

06/12/2016 online at: <http://www.zmescience.com/ecology/climate/syria-water-use/>

Oxfam, 1 person in 8 worldwide without access to water

A reported 748 million people worldwide (one in eight) live without access to drinking water and 2.5 billion have no hygienic-sanitary services due to wars and natural catastrophes, according to the new report '#Savinglives: water emergency' published by Oxfam on Tuesday.

And the situation is getting worse for men, women and children affected by wars devastating countries like Syria, Iraq, Yemen and South Sudan or forcing nine million others to flee attacks by Boko Haram in the area around the lake Chad, Nigeria, Niger and Chad.

Natural disasters also play a role in areas including Haiti and Sudan.

Riccardo Sandone, the humanitarian coordinator of Oxfam Italia said the organization's work is essential in providing clean water and services and that it has reached over 13.7 million people in the gravest emergencies worldwide, although more can be done.

And in order to reach more people, Oxfam has launched the #Savinglives campaign for the holidays.

Over 20 million people in Syria and Iraq are without water and food, the Oxfam report said: in Syria, after almost six years of war, the situation is critical with 13.5 million people relying on humanitarian aid and, among them, three million with irrelevant or gravely insufficient access to food and clean water.

Each day almost 7,000 Syrians have to leave their country, in East Aleppo over 275,000 people, with winter arriving, remain trapped under bombardments with food and water getting scarce.

Oxfam has provided relief by crossing conflict areas from west Aleppo (controlled by the government) to Aleppo east (under the control of opposition forces), succeeding in installing a generator and thus guaranteeing clean water across Aleppo.

As serious is the humanitarian impact of the conflict in Iraq after the ongoing offensive to reconquer Mosul from ISIS, which could generate hundreds of thousands of refugees, raising their number to over 10 million, half of them children, of those who are in desperate need of aid. Oxfam is currently working to guarantee by the end of December water and essential services to at least 60,000 displaced who are fleeing the war to refugee camps.

Sansone said the organization is "working against time to guarantee the survival of people trapped in war zones, bringing clean water and first aid and to prevent epidemics in crisis areas that are already very poor, where infrastructure and sanitary systems are minimal".

"In Yemen we have reached almost one million people in areas already affected by war, in South Sudan we have succeeded in bringing drinking water and hygienic services to over 860,000 people, preventing the spread of cholera".

06/12/2016

online

at:

http://www.ansamed.info/ansamed/en/news/sections/generalnews/2016/12/06/oxfam-1-person-in-8-worldwide-without-access-to-water_e4842f35-28eb-4af1-8ec5-ec6490e82d81.htm

JNF-USA water expedition exposes global professionals to Israeli expertise, innovation

For Coloradan water industry leader Robert Lembke, Israel's successful quest to quench its people's thirst provides vital lessons for his own largely arid state.

"We have about 13 inches of rain on average in most of the state," he told The Jerusalem Post on Monday. "We have a drought situation regularly."

"In many ways, we're a mirror for a lot of the same issues Israel is facing," added Lembke, who is president of the United Water and Sanitation District and the chair of Jewish National Fund-USA's IsraelH2O Mission. "It's a miracle that Israel has solved a 2,000-year-old problem."

Lembke was speaking with the Post on the sidelines of a weeklong tour of Israel's key water facilities, initiated and organized by the JNF, during a stop at the central Israel Shafdan sewage treatment plant. The expedition, entitled "IsraelH2O: A Tour on the Trail of Israel's Water Solutions," aimed to introduce its 40 participants to the highlights of Israel's water successes, from North to South.

While mostly from the United States, with a particularly strong representation from Colorado, the participants also included four Thai government workers and a representative of the United Nations Development Program.

The H2O Tour is the culmination of a series of "Water Summits" that JNF held in the past year across the United States, which took place in partnership with Seth M. Siegel, author of the bestselling book on Israel's water sector, "Let There Be Water: Israel's Solution for a Water-Starved World." Chaired by Lembke, the tour was directed by Talia Tzour Avner, KKL-JNF chief Israel emissary in New York.

"We thought it would be great if we could arrange a water mission to Israel to follow the steps of development and success of JNF and the State of Israel in the water field and water economy," Tzour Avner said. "What we found out was there was a great interest from water professionals from the US and other countries."

"The impression and the reactions are heartwarming," Tzour Avner said. "They cannot believe what they see."

With a diverse array of participants hailing from academia, the water industry, government, and backgrounds of general interest in water, Tzour Avner stressed that each participant is approaching the trip from a different angle, through a different lens. JNF is hoping to expose the participants to the miracles that the Israeli water industry is creating and to garner support for water projects in Israel and to develop the country's periphery.

"This is a chance to share our knowledge with the rest of the world," Tzour Avner said.

On Friday and Saturday, tour members spent their time in the North, meeting with an Israel Water Authority representative at Lake Kinneret (Sea of Galilee), visiting the epicenter of bird migration at the Hula Lake, and experiencing both the religious and environmental implications of the Jordan River.

By Sunday, they began their day in the North, learning about water filtration mechanisms at Amiad Water Systems and then moving southward to discuss transboundary water pollution issues at an Emek Hefer reclamation facility – ending the day in Tel Aviv. Prior to their arrival at the Shafdan wastewater treatment plant on Monday, the group also saw the nearby Sorek desalination facility, and would later in the day hear lectures on Israeli water technologies back in Tel Aviv.

From Tuesday through Thursday, the participants were scheduled to visit relevant sites in the Negev Desert and in Jerusalem, such as JNF's Nahal Besor reservoirs, which aim to trap floodwater that rushes through the Negev's longest river as well as containing recycled water from the Shafdan. They were also slated to see JNF's Be'er Sheva River Park, a restoration project constructed for the city, and meet with representatives of Hagihon, Jerusalem's water and wastewater utility.

While not Jewish himself, Lembke said he began visiting Israel in 2011 and first started collaborating with JNF a year later.

“JNF has been a leader in trying to get Israeli water solutions presented in the US,” he said.

Lembke served as chairman at JNF's Denver Water Summit in March. In 2015, he founded a project in collaboration with Israeli irrigation giant Netafim and Colorado State University to further drip irrigation research in Colorado's South Platte River Basin.

After the successful Water Summit, Lembke said he thought a comprehensive tour for those interested in Israel's water sector would be an ideal next step. He expressed his hopes that participants would be able to “take their little sparks of knowledge they gain here” back to their home communities.

“Hopefully it will catch fire in a few spots,” he added.

For the government officials participating from Thailand, the Israeli water innovation was doing just that, as they explored ways to improve their country's water management policies.

“Israel is the best for water management, and I hope that some areas of Thailand can have the benefits of sharing this experience,” said Worasart Apaipong, director-general of the Water Resources Management Department, within Thailand's Natural Resources and Environment Ministry.

While Thailand does have a few desalination plants, Apaipong stressed his interest in learning more about Israel's facilities. But first and foremost, he expressed his intentions to bring better organization to a country that technically has a surplus of water but poorly manages that critical resource.

“That's why sometimes Thailand has a drought,” he said.

Because the water solutions demonstrated during the tour could be valuable to a variety of countries around the world, the hosts also invited a UN representative to participate.

The UN expert who joined the trip was Anne Juepner, the Nairobi-based director of the UNDP's Global Policy Center on Resilient Ecosystems and Desertification. Juepner expressed her interest in sharing Israel's water sector experience through UNDP channels, stressing that the country has made enormous progress in water efficiency and recycling.

"It's very impressive to see the technological solutions for Israel's water issues," she said. "Some of the aspects will certainly be of interest to other countries."

The content of the tour is particularly relevant to the UNDP, as the body is continually working on water governance and transboundary water issues, creating a platform for exchange on the subject in partnership with a variety of other organizations, Juepner explained.

"It's very inspiring to be with the other participants of the tour," she said. "They are individuals who joined the tour because they are interested in the subject of water and in Israel as a country."

"It's a really, really remarkable project," Juepner added.

07/12/2016 online at: <http://www.jpost.com/Business-and-Innovation/Tech/JNF-water-expedition-shows-off-Israeli-expertise-and-innovation-474644>

Sisi receives water ministers from Nile basin countries

President Abdel Fattah al-Sisi received on Tuesday ministers of water from five Nile Basin countries including Sudan, Tanzania, Uganda, South Sudan and Burundi who took part in the conference organized by the National Water Research Center in Cairo.

Egyptian Minister of Irrigation Mohamed Abdel Aaty Khalil and ambassadors of the participating countries attended the meeting.

Sisi welcomed the ministers and highlighted Egypt's attention toward boosting ties with African countries, especially the basin countries, said presidential spokesperson Alaa Youssef.

He reiterated Egypt's vision, which focuses on cooperation as the best way to manage the joint water resources.

Sisi stressed the necessity of abandoning conflicts and boosting cooperation with the basin countries to carry out the implementation of the framework agreement.

With regard to the basin countries, Sisi stressed Egypt's interest in reaching a consensus resolution in the form of a comprehensive agreement that secures water security for all parties.

Sisi added that Egypt adopts policies based on non-intervention within the affairs of other nations or conspiring against them; rather, it focuses on its own developmental path in order to achieve real progress.

The participating ministers, according to Youssef, praised Egypt's technical support in fields of water resources and irrigation, as well as the joint projects carried out at several Nile basin countries.

They commended Egypt's role in boosting cooperation with those countries; and expressed agreement with Sisi over cooperation to achieve joint interests, especially that the scarcity of water in Africa requires joint work to take proper advantage of the limited water resources.

Minister Abdel Aaty reaffirmed during the meeting Egypt's interest in cooperating with the Nile Basin countries.

He referred to the navigational line project, which links Victoria Lake with the Mediterranean Sea, as a promising project which will provide a maritime exit for African landlocked countries.

The president, according to Youssef, also stressed the importance of achieving economic integrity between basin countries, highlighting the necessity of carrying out integrative developmental projects to improve the infrastructure of the basin countries, in order to foster trade exchange and achieve joint interests.

07/12/2016 online at: <http://www.egyptindependent.com/news/sisi-receives-water-ministers-nile-basin-countries>

Israel Is Undisputed World Leader in Using Purified Wastewater for Crops

Almost nine-tenths of Israeli wastewater is purified and used in irrigation, making it the world leader in this field by a considerable margin, according to a Water Authority report.

Spain, the second-place country, recycles only 20 percent of its wastewater, compared to Israel's 87 percent.

About 50 percent of Israeli wastewater undergoes an advanced treatment process, which enables it to irrigate any kind of crop rather than being suitable only for certain types of irrigation.

The Water Authority publishes a biannual survey of wastewater management, in conjunction with the Israel Nature and Parks Authority. The latest survey, containing data for 2014, covers 99 percent of the country's population.

The data show that purified wastewater irrigates 419 million square meters (4,510 square feet) of crops. This accounts for almost a third of all water used for agriculture in Israel, and about a fifth of the country's total water consumption.

The quality of treated wastewater is determined largely by the concentration of two salts – chloride and sodium – since these salts damage both crops and the land itself if present in high concentrations.

In recent years, the increased use of desalinated seawater, and the corresponding decrease in the use of water from Lake Kinneret (which is relatively salty), has decreased the presence of these salts in wastewater.

The survey also found a decline in other pollutants. The document predicts that by 2018, 80 percent of purified wastewater will be fit for unrestricted agricultural use. This will mainly be thanks to plans to upgrade several large purification plants, including the Soreq plant, which handles waste from western Jerusalem, and the Haifa plant.

Another factor contributing to the improved quality, the study said, is that wastewater is now dealt with by municipal water and sewage corporations. These companies have built infrastructure for collecting wastewater and improved the maintenance and management of treatment plants.

Yet another major factor was the enactment of new regulations barring companies from sending their wastewater into municipal sewage systems if it contains high levels of industrial pollution.

Though desalinated water has the advantage of being less salty, its use has created other potential problems for farmers. One is that it has a higher concentration of boron, which is naturally found in relatively high concentrations in seawater but can be damaging to crops. So far, however, no treated wastewater has been found to contain boron in concentrations above the maximum permitted for irrigation.

Despite Israel's wastewater achievements, it has some problems that have yet to be solved. First, some parts of the country lack facilities for storing treated wastewater, and this sometimes results in it being released into nearby streams. And in Jerusalem, no solution has yet been found for wastewater produced in the city's eastern half, so that waste still flows into the Kidron Stream and pollutes it.

Moreover, no effective means have yet been found to purify wastewater of traces of medications excreted by people who use them. Research into such trace medications has only begun in recent years, so it's not clear how high a concentration would be dangerous for people who don't take those medications.

Early in the previous decade, an interministerial committee decided to require higher standards for recycled wastewater. That triggered efforts to upgrade treatment plants, which are still in progress today.

Several of the country's treatment plants already meet the new, stricter standards – most notably the Shafdan plant, which treats 130 million cubic meters of wastewater a year from the Greater Tel Aviv region. Consequently, treated wastewater is now widely used for irrigation in both the north and the western Negev.

Nationwide, the quantity of treated wastewater rose by 10 percent from 2010 to 2014, the study said.

online at: <http://www.haaretz.com/israel-news/science/.premium-1.758416>

Israeli Minister: Nearly 90 Percent of Waste Water Recycled, 4 Times Higher Than Any Other Country

At a time when many countries are facing drought and critical water shortages, Israel now recycles nearly 90 percent of its waste water, around four times more than any other country, according to Israel's minister of strategic affairs and public diplomacy.

Gilad Erdan made the claim in an address at the first-ever Israeli Corporate Social Responsibility (CSR) conference in Tel Aviv, hosted by Maala, the Jewish state's CSR standards organization.

"It is a remarkable achievement and this benefits not only Israel," Erdan added. "Israeli companies are helping save water around the world, from Africa to California to India."

The conference, which was held last week, brought together leaders from Israel's business community as well as international experts in sustainability and members of the CSR community to address Israel's social and environmental innovation. Speakers from companies such as Teva, Intel, 3M and the Strauss Group headlined the conference.

"Israel is innovative, creative and dynamic and has more high-tech startups per capita than anywhere else in the world," Erdan said. "And these startups, in large part, are not only focused on creating high profits, but also finding ways to solve the world's most pressing problems."

Israeli companies leading the way in sustainability innovation featured at the conference included Hadera Paper, the world's most environment-friendly paper company, Netafim, drip and micro-irrigation pioneers, and Mekorot, the country's top agency for water management.

07/12/2016 online at: <https://www.algemeiner.com/2016/12/07/israeli-minister-nearly-90-percent-of-waste-water-recycled-4-times-higher-than-any-other-country/>

EU's grants, loans to Jordan to total 500mln Euros in 2016

The value of grants and loans provided and pledged by the European Union to Jordan in 2016 will total 500 million Euros (300 million in form of grants and 200 million as soft loans), according to EU Ambassador to Jordan Andrea Matteo Fontana.

Fontana spoke on the sidelines of the signing ceremony of two grants and a loan to improve services provided by the ministries of municipal affairs and water and irrigation.

Following is the full text of an EU statement released on the occasion: The European Union (EU) and the European Bank for Reconstruction and Development (EBRD) are joining Jordan's effort to extend the use of sustainable and innovative renewable energy technology

by providing finance, grants and technical cooperation for two projects in the solid waste management and water supply sectors.

These improvements to local municipal services will strengthen the country's ability to cope with the increased population, which now includes 1.3 million refugees from Syria. Both projects are part of the EU's €90 million renewable energy and energy efficiency programme in Jordan.

The EU is providing a €30 million grant to help the Water Authority of Jordan construct a photovoltaic system to power three to five water pumping stations across the country. The EBRD will manage the grant funds and supervise the implementation of the project.

Rapid population growth and the climatic conditions of the country have put significant pressure on the country's limited water resources and created severe shortages. The increased demand for water and wastewater resources also brings higher demand for electricity, which represents up to 60 per cent of operating costs for water services.

Through the use of solar power for water and wastewater facilities, the project is expected to set a precedent for the use of sustainable renewable energy technology in the sector. The project also aims to develop market structures to enhance private sector participation by focusing, where feasible, on the introduction of engineering, procurement and construction, and operations and maintenance contracts. In addition, the EBRD is extending a loan of up to €7.5 million to the Greater Amman Municipality (GAM), while the EU Delegation in Jordan is contributing €5 million in grants to help build a waste-to-energy plant in the Al-Shaer solid waste transfer station. The plant is expected to produce up to 9 million cubic metres of biogas per year from food waste, recycling approximately 11 per cent of the organic waste collected. The plant's yearly capacity for energy generation, estimated at up to 25,000 MWh, would be enough to power 8,000 Jordanian households. The EBRD is also expected to mobilize from other international donors an additional €2.5 million in grants for the investments as well as additional donor funds for technical assistance to support the project implementation.

The population growth in Amman has placed an unprecedented burden on the solid waste management services provided by GAM, which were already under strain. In recent years, the Al-Shaer waste transfer station, the only operational station serving the capital, has seen a 40 per cent increase in the solid waste it processes and the plant currently operates at a level greatly exceeding its design capacity. The project will help ease the burden placed on this facility.

The EBRD loan is part of a financing programme worth €102 million, recently signed to support GAM's investment plan. It addresses the most pressing infrastructure needs with regard to solid waste.

Andrea Matteo Fontana, EU Ambassador to Jordan said: "Today, the EU is a key partner for Jordan in developing green energy sources with more than €150 million, and we are proud to announce that we have exceeded our 2020 green energy targets for Europe. We are therefore happy to use our experience to support Jordan in achieving their green energy targets." Heike

Harmgart, Head of the EBRD Resident Office in Jordan, said: "The EBRD is committed to helping Jordan upgrade its municipal infrastructure services to improve the daily lives of Jordanians and refugee communities alike. The Bank promotes the adoption of renewable technology for a more sustainable use of scarce resources. This work can become a model for other projects in the Jordanian municipal sector." Jordan became an EBRD shareholder in 2012 and to date the Bank has committed US\$ 775 million across 33 projects in various sectors of the economy, in addition to US\$ 120 million of trade facilitation credit lines with local banks.

07/12/2016

online

at:

http://petra.gov.jo/Public_News/Nws_NewsDetails.aspx?Site_Id=1&lang=2&NewsID=280765&CatID=-1

KRG agrees loan with UK for water treatment project

The Kurdish government has signed a loan deal with the United Kingdom to fund a water treatment project in the cities of Erbil and Sulaimani.

“This is a significant step that will help improve the daily lives of the citizens of Erbil and Sulaimani,” said Prime Minister Nechirvan Barzani, according to an official statement announcing the \$34.8 million loan.

He noted that it is the first time the British government has provided a direct loan to the Kurdistan Regional Government (KRG) for infrastructure. “We hope this initial loan will pave the way to attracting finance for the next stage of this important project.”

In 2015, the KRG signed a \$1.2 billion contract with UK water engineering company Biwater to deliver water treatment to the Kurdistan Region’s two largest cities. The loan announced Thursday will finance the development works phase of the Erbil and Sulaimani Water and Wastewater Project.

The aim of the project is to “reduce the Kurdistan Region’s reliance on dwindling groundwater reserves to deliver long-lasting environmental benefits.”

The funding comes from the UK Export Finance (UKEF), the UK’s export credit agency.

08/12/2016 online at: <http://rudaw.net/english/kurdistan/081220163>

Water preservation research vital to sustain growth, says minister

The Saudi government is supporting universities and research centers to carry out scientific studies on water to reach findings that would help it draw up vital development strategies, said Environment, Water and Agriculture Minister Abdul Rahman Al-Fadli when he opened the seventh International Conference on Water Resources and Arid Environments (ICWRAE-2016) at King Saud University (KSU).

The conference discussed a number of topics dwelling at length on ways of preserving water resources.

Speaking at the opening session, the minister stressed that Custodian of the Two Holy Mosques King Salman has been showing keen interest in supporting scientific research on water resources.

“Water is our life’s most precious resource and as the need for it is increasing exponentially with population growth, it is important to discover alternative sources, aside from desalination,” the minister said.

He also stressed the need to take advantage of rainwater through sophisticated methods of water harvesting.

The Saudi government has exerted efforts and money in preserving the environment, the minister added.

Successive governments have paid attention to water supplies, including recruitment of technical missions to conduct surveys, he said, adding that these initiatives led to the establishment of Saline Water Conversion Corp. (SWCC) in 1974.

“In the recent past, Saudi Arabia has witnessed rapid development in various areas, which caused a significant increase in the demand for water,” the minister said.

He said that Saudi Arabia has been striving to increase water supplies through the expansion of desalination plants and re-use of treated wastewater.

Saudi Arabia’s concern over water is also highlighted in its commitment to draw up national plans for water aimed at determining water resources in the Kingdom and rationalize its consumption, especially in the agricultural sector, and working out a water policy based on an integrated management of water resources, the minister said.

Al-Fadli commended the university’s outstanding efforts in promoting water research.

Referring to Saudi Vision 2030, the minister said that the plan touched on the ministry’s key initiatives in the area of water, which deals with water rationalization programs, reduction of water waste in water networks and the re-use of treated sewage water.

During his keynote address representing ICWRAE patron King Salman, the minister noted the importance of such conferences with international expertise for tapping new technologies to discover new water resources and curb pollution.

Abdulmalek A. Al-Shaikh, chairman of the ICWRAE organizing committee, general supervisor of the Prince Sultan Institute for Environment, Water and Desert Research at the KSU and general secretary of the Prince Sultan bin Abdulaziz International Prize for Water (PSIPW), in his welcome speech outlined the conference agenda that aims to explore the use of new technologies in the study of arid and semi-arid environments.

It provides an opportunity for decision-makers, experts and scientists to share their expertise in order to find comprehensive solutions for water resource problems.

Mahmoud Abu Zeid, president of the Arab Water Council, gave a power point presentation titled ‘Toward sustainable Arab water security’ at the second session of the conference.

ICWRAE 2016 is jointly organized by the Ministry of Environment, Water and Agriculture, KSU, the PSIPW and Sultan bin Abdulaziz Al-Saud Foundation.

08/12/2016 online at:
http://www.zawya.com/mena/en/story/Saudi_boosts_research_on_ways_of_preserving_water_resources-ZAWYA20161208034903/

Climate change to affect water availability in Egypt: Former Minister

Ayman Farid Abu Hadid, former Minister of Agriculture, said the increase of temperature by one degree Celsius will affect the amount of water available on the planet earth, and in case it rose by 3 degrees, it will affect the availability of food as a result of a significant shortfall in crop productivity.

Abu Hadid added during a seminar at the Faculty of Agriculture, University of Minya, entitled "The future of agriculture in Egypt on Wednesday that the water level of seas and oceans will rise in case temperature rises by 5 degrees Celsius, stressing that Egypt is one of the countries that would be affected by the water crisis in 2050 if it did not take precautionary measures in preparation for climate change challenges.

The climatic changes will affect the Delta, and might cause its north areas to drown and a detriment of agriculture in Egypt, he said, pointing out that the higher the temperature is, the more water crops will need.

Climate change will heavily affect crop productivity; in light of the decreasing amount of water in the Egypt where the average share of water per capita is less than 500 cubic meters of water, compared to other countries, said Abu Hadid.

Egypt will be one of the most affected countries by the future of water during 2050, according to research and scientific studies.

Abu Hadid also stressed the need for the development of surface irrigation system, and proposed solutions to reduce water consumption, and increase crop productivity, including the agricultural land settlement using laser, the use of sprinkler and drip irrigation system, and genetic engineering and modern technology to improve productivity.

09/12/2016 online at: <http://www.egyptindependent.com/news/climate-change-affect-water-availability-egypt-former-minister>

India plans to make most of its share of water under Indus pact with Pakistan

India has set in motion its ambitious plan to utilize its share of water from western tributaries of the Indus, a decision driven by India-Pakistan geopolitics, which may see work begin on a major hydel project on the Chenab early next year. It is a long haul to implement PM Narendra Modi's September 27 decision to review water use within the ambit of the Indus Water Treaty (IWT) with Pakistan, but the government has prioritized three hydel projects on Chenab and its tributary —Sawalkot (1,856 MW), Pakal Dul (1,000 MW) and Bursar (800 MW) —in a time-bound manner.

Building infrastructure on Indus, Chenab, Jhelum and their tributaries is a huge task but the short-listed projects are intended to express India's political will and preparedness to respond to Pakistan's use of terrorism against India with every option at its command including a new preparedness to use all possible leverage points.

"The Centre has constantly been in touch with Jammu & Kashmir government for all necessary ground work. Execution of Sawalkot project is expected to start early next year. The under-construction Pakal Dul project has already received an impetus after the government displayed an urgency to complete it on time," said an official.

The Sawalkot project envisages a 193-meter-high dam on Chenab for generating 1,856 MW. It will be constructed in two phases. Since 629 families consisting of 4,400 individuals are likely to be displaced, the state government has been working on a proper rehabilitation plan before actual work begins. The Bursar project will, however, take time before it gets clearances.

"Since NHPC had initially termed it an unviable project on certain grounds, there is need for proper study before the government goes ahead with it. The project may be tweaked to make it viable as it is now our priority area," said the official. As previous cost and viability calculations are revised in view of the political imperative, India could be looking to use as much of Indus water as it can. "Maximizing use of water must be priority. It is good that the government has sincerely moved to execute pending projects to legitimately use its share of water within IWT. This is the most realistic option well within the framework of the treaty," said Uttam Sinha of the Institute of Defense Studies and Analyses (IDSA).

Towards this end, speeding up pending hydro-power projects is only one component of what India can do to utilize its share of water under the IWT. Under the 1960 treaty, India is permitted to construct storage capacities on the western rivers up to 3.6 million acre feet (MAF) for various purpose including domestic use.

India has, so far, not developed any storage facility or tapped its full quota of water for irrigation. Referring to the World Bank's recent decision to set up a Court of Arbitration (CoA) to settle disputes relating to Kishanganga and Ratle hydro projects on Pakistan's demand, Sinha said India should forcefully tell the Bank to factor in technological changes and new knowledge while looking at the implementation of ongoing projects.

10/12/2016 online at: <http://timesofindia.indiatimes.com/india/India-plans-to-make-most-of-its-share-of-water-under-Indus-pact-with-Pakistan/articleshow/55918158.cms>

CM launches 100 MGD water supply project

Chief Minister Sindh Murad Ali Shah on Saturday laid the foundation stone for a water supply pumping project in the city.

The project will supply 100 MGD water to Karachi, which will be brought from Keenjhar Lake in Thatta district. The project has been established at the cost of Rs 1.47 billion and will be completed within two and a half years.

CM Murad, while addressing during the ceremony, said that the project will help reduce the water shortage facing the city. He said that the water pumping projects in Dhabeji and Pipri were insufficient to cope with the increasing demand for water, as the Dhabeji project was established during the first stage in 1959.

Therefore, this new project will also help reduce the water losses at other pumping stations at Dhabeji, and improve the existing water supply by 50 MGD. He also said that ongoing water projects will be completed soon.

“The government of Sindh is launching Rs. 1.2 bn project to rehabilitate the existing water pumping projects,” he said. Furthermore, he said that Sindh government has given Rs 1.3 bn to K-Electric to improve the electrical works at the Dhabeji Pumping Station.

He expressed dissatisfaction that the government of Sindh is paying Rs. 500 million electricity bills per month to the K-Electric on behalf of the Karachi Water and Sewerage Board (KWSB) which can be saved if they set up their own power station.

He said that the Pakistan People’s Party was desirous to solve the problems of the people of the province, and it is his responsibility, as the chief minister, to make all necessary arrangements.

11/12/2016 online at: <http://pakobserver.net/cm-launches-100-mgd-water-supply-project/>

80 Jazan villages hit by drought

A total of 80 villages south of Abu Uraish have been reeling under drought for years and the Ministry of Environment, Water and Agriculture has not done anything to alleviate people’s suffering, residents said.

Saeed Abdullah said they have been asking the ministry to solve the issue of drought in the villages for years.

“All what we receive is promises without any action. We had to take matters into our own hands. We collected money and sank our own wells. Each well cost us at least SR50,000. Otherwise, we rely on water tankers that come from the city, which is also an expensive solution,” said Abdullah.

Mousa Ali said the ministry has ignored them and the water network projects have failed to reach them.

“We are forced to dig our own wells and buy water tankers. A truck can cost up to SR200,” said Ali.

Salim Awaji said many of the people who live in these villages cannot afford the alternatives presented.

“Why don’t we have the water network connected to us? We have been facing the problem for years,” said Awaji.

Jazan Water Directorate spokesman Alaa Kharad said the directorate is working on providing water for the villages south of Abu Uraish.

11/12/2016 online at: <http://saudigazette.com.sa/saudi-arabia/80-jazan-villages-hit-drought/>

Jordan secures WB soft loan to optimize water, energy management

Jordan on Sunday signed a \$250 million soft loan with the World Bank to enhance reforms in the energy and water sectors.

The loan's payback period is 35 years with an interest rate of around 1.25 per cent and a five-year grace period, Minister of Planning and International Cooperation Imad Fakhoury said at the signing ceremony Sunday.

The minister said the Second Programmatic Energy and Water Sector Reforms Development Policy Loan will be provided on concessional terms through an International Bank of Reconstruction and Development (IBRD) loan of \$225 million and support from the Concessional Financing Facility (CFF) in the amount of \$25 million.

The loan aims at improving the financial viability of the electricity and water sectors and increasing efficiency gains in the energy and water management, which are “part and parcel of our new vision, Jordan 2025 of achieving self-reliance and financial stability,” Fakhoury added.

The loan will be transferred to the Treasury before the end of the year, he said.

It will support Jordan’s efforts in ensuing better management and efficiency in the water and energy sectors, especially since around 16 per cent of the electricity consumption in Jordan is drawn by the water sector, he added.

The loan will support Jordan's efforts to maximize benefits of water resources and reduce the energy bill in the water sector. It will help reduce groundwater depletion caused by over-pumping of underground water resources.

"The increase of energy efficiency and the increased adoption of renewable energy in the sector will help us achieve our goals in this regard," said Fakhoury.

"I would like to thank the [World] Bank again for establishing the CFF which came in response to our request in the spring of 2015 for the Bank's support in advocating for a paradigm shift, a new way for the international community to engage with vulnerable middle-income countries affected by the Syrian refugee influx. The CFF is also very much in line with the outcomes of the London [donor] conference," the minister said.

Jordan has been advancing on political, social and economic transformation, serving as a model for successful reforms and well-managed change in a region that has been experiencing great turmoil, particularly in recent years, according to Fakhoury.

"We remain strongly committed to moving steadfastly on this front, and in offering a model for others in the region and elsewhere by providing a successful roadmap for stability and effective reforms," he added.

"The signing of the DPL-II agreement is timely for Jordan. We look forward to the quick disbursement of this loan over the coming days to the Treasury account, where this will assist us in meeting some of our financing needs for 2016."

Ferid Belhaj, Director of the World Bank's Middle East Department underlined the WB's "relentless support to Jordan".

He said the WB is committed to sponsoring Jordan as it moves ahead with reforms.

12/12/2016 online at:
https://www.zawya.com/mena/en/story/Jordan_secures_World_Bank_loan_to_boost_water_energy_sector-ZAWYA20161212044345/

Precipitation in Iran continues to fall

Total precipitation volume in Iran has reached some 54.385 billion cubic meters during the current crop year started on September 22.

Iran has experienced 33 millimeters of precipitation from the beginning of the current crop year, which indicates a 31 percent decline compared to the long-term average precipitation (last 47 years which was 48 millimeters), Iran's energy ministry reported.

Compared to the same period of the last crop year, total precipitation in Iran indicates a fall by 59 percent.

The highest rainfall was registered in Caspian Sea catchment with 115 millimeters of precipitation (39 percent decrease year-on-year), meanwhile the East catchment witnessed only 1 millimeter rainfall (95 percent fall).

Iran's total annual water consumption is approximately 93 billion cubic meters, out of which about 92 percent is used in agriculture (86 billion cubic meters), 6.6 percent in municipality (6.18 billion cubic meters), and 1.2 percent in industry (1.12 billion cubic meters), according to the United Nations Food and Agriculture Organization (FAO).

Up to 70 percent of water used in the agriculture sector is being wasted, Iranian officials say.

12/12/2016 online at: <http://www.azernews.az/region/106356.html>

A Drive to Save Saharan Oases As Climate Change Takes a Toll

The oasis of Dar Oumira, in southern Morocco, was once a lush palm grove before it became the sparse sand patch it is today, studded with just a few shrunken date palms. The surrounding desert is rapidly spreading between the trees, whose dense shade once sheltered fruit orchards and fields of wheat.

The demise of this oasis isn't an isolated case. In Morocco, where oases occur in the desert basin that lies south of the country's Atlas Mountains, rising temperatures, deepening drought, and spreading desertification are undermining the water sources on which oases depend. Over the last century, roughly two-thirds of Morocco's oasis habitat has vanished — a process that has accelerated in recent decades as temperatures have steadily risen, according to Aziz Akhannouch, the country's minister of agriculture and marine fisheries. This trend is also affecting the rest of the Maghreb, the North African zone that encompasses the arid Saharan nations of Morocco, Tunisia, Libya, and Algeria.

Layer by layer, the key components of these fabled desert ecosystems are being stripped away: Once-plentiful fruit groves are vanishing, ancient date palm forests are thinning, and people who once relied on these lush areas for their livelihoods are moving away. The decline of oases has several causes, including the overexploitation of groundwater and neglect as residents feel the pull of urban migration. But most notable are regional shifts in the climate, as temperatures rise and precipitation declines.

At the United Nations climate conference in Marrakech last month, the Maghreb and the threats it faces from climate change were a major focus, and oases were held up as a symbol of the impacts already playing out on the landscape. The spotlight on these habitats has boosted awareness of oases as hubs of traditional knowledge on climate adaptation. Now, with the need for innovative adaptation projects in North African oases becoming increasingly urgent, conservationists, governments, and desert inhabitants are collaborating to protect these ecosystems against an uncertain climatic future. Oases owe their existence to human ingenuity in sustainable water management.

In Morocco, ancient water systems are being restored to irrigate and replenish oases. The U.N. also is helping Moroccan women to cultivate culturally important, water-efficient medicinal plants to slow the spread of the desert into oases. And in Tunisia, scientists and farmers are employing plant-breeding techniques to make their oasis crops more resistant to drought and high temperatures. But much more needs to be done.

Oases owe their existence to human ingenuity in sustainable water management: By tapping into natural underground aquifers and channeling rainfall, people have kept these habitats lush for centuries. Water-efficient date palms were historically selected for the deep shade and humid habitat that their dense canopies created for agriculture, which allowed orchards, vegetables, and forage crops to grow amid the desert. Now, however, these carefully curated habitats are shrinking, as conditions change.

The Middle Eastern and North African (MENA) climate zone, which includes Morocco, is already one of the world's most water-scarce regions. Between 1960 and 1990, MENA countries experienced temperature increases of 0.2 degrees C per decade; since then, the warming rate has risen, according to the World Bank's 2014 Turn Down the Heat report. Carl-Friedrich Schleussner, a climate scientist with the Berlin-based science and policy non-profit Climate Analytics, says the region will be affected by a "very robust drying signal" in the coming decades. "It's already experiencing drying trends, and this is only predicted to continue," he says.

With lowered rainfall, crop yields are expected to decrease by up to 24 percent across different regions of the Maghreb. That spells trouble for the 40 percent of Moroccans dependent on agriculture for their livelihoods. This concern is closely intertwined with the fate of the oasis zone, where almost 2 million Moroccans live and farm.

In the wake of last year's Paris climate agreement, the world is now aiming to limit global warming to 1.5 to 2 degrees C above pre-industrial levels. But the 2014 World Bank report, which Schleussner co-authored, says that even if we cap temperatures at the 2-degree target, countries in the MENA region will experience heat waves for 30 percent of the summer months. The report predicts that with a global temperature rise of 3 degrees C, the Maghreb would experience 1.5 months a year of moderate drought. At 4 degrees and above, that rises dramatically to 6 months a year. The number of drought days could increase by more than 50 percent by the end of the 21st century. This would have dire consequences for agriculture and would hasten desertification and the desiccation of oases.

Just a few kilometers away from Dar Oumira, the date palms of the Tighft oasis stand tall. This sprawling palm grove casts dense shade over the earth — the mark of a good oasis, according to Youssef Zaaim, a teacher and farmer from the surrounding Ferkla oasis region.

Tighft is planted with olive and apricot trees, and rectangular fields are filled with leafy crops such as maize and alfalfa, the latter grown to feed livestock. Huge bunches of plump dates sway in the palms overhead. This oasis prospers because of a mix of ancestral ingenuity and geographical luck, Zaaim explains.

Water is abundant here because farmers — who live in the small villages flanking the oasis — are able to source it from two places: natural wells scattered around the site, and also the lkhttarts, an irrigation system that channels water underground from more distant water-rich locations. (Dar Oumira is reliant on only one source of water, an lkhttart.) As is customary, Tighft's crops are irrigated via a geometrical system of raised channels that release controlled amounts of the water into individual plots, soaking the soil. Water is strictly apportioned according to plot size.

“People don't know about climate change, but they preserve things unconsciously — they are used to protecting the environment,” says Zaaïm.

Jean-Baptiste Cheneval, network coordinator at the Associative Network for the Sustainable Development of Oases (RADD), a group that works to safeguard and support oases in the Maghreb, says, “These [communities] have developed in complicated conditions and invented techniques that have proven themselves in terms of sustainability.” But whether these adaptive techniques can continue to keep the desert at bay is less clear.

In a handful of oases, including in the nearby province of Errachidia, locals are reviving old technologies, such as the lkhttarts (also known as khetarras). These 2,000-year-old irrigation systems intercept a water source upstream, then carry it via a downward-slanting underground canal to areas that need it. The effects of drought and groundwater exploitation are visible across the southern Moroccan landscape. Mohammed El Guerrouj, general director for the Agency for Agricultural Development in Morocco, says his organization is working with the Adaptation Fund, a World Bank organization, to restore khetarras across the Maïder and Intermediary Gheris river basins of the region.

The khetarras and renovated irrigation canals will provide drinking water for oasis inhabitants and will also allow locals to boost date production. As palm groves consequently expand, they will create a stronghold against desertification. The Adaptation Fund also has launched a parallel project to build small dams in the area to help replenish groundwater reserves.

The effects of drought and groundwater exploitation are visible across the southern Moroccan landscape. The Ferkla River, after which the local cluster of surrounding oases is named, was once a rapidly flowing watercourse. Now, it's just an empty, dusty channel. Zaaïm estimates that it last flowed constantly in the 1970s. “Now it flows for one, two, or three days maximum,” he says. The decline of rainfall, coupled with the overexploitation of local groundwater reserves, has dried up this riverbed, as well as the nearby Sat and Tangarfa rivers — a reliable trio that once made many of the surrounding oases lush.

In the Ferkla region, another adaptation project has been launched by 15 women who are farming climate-resilient medicinal and aromatic plants to replace crops, such as barley and wheat, that are no longer faring well under drought conditions. The women's small plot is filled with basil, rosemary, mint, thyme, and other herbs — plants that are less water intensive and are used to make medicinal teas and cosmetics for sale. These products also fetch a higher price than regular crops. But even for these small-scale farmers, the effects of drought are

clear: The water table in the well they use to irrigate their plants has dropped from its historical 10 meters (33 feet) below ground, to 21 meters now.

“A long time ago [people in this oasis] used to collect many types of fruits — peaches, apricots — but now there are just date trees and olives, and even olives are affected by the heat because there’s no rain,” says Saidi Fatiha, president of Chourouk, the women’s association in charge of the plot. In oases, some plants have simply replaced others, naturally, due to climate pressures — like the bitter pomegranate, a smaller, less tasty fruit variety that, thanks to its relative climate hardiness, has succeeded its sweeter cousin. Taking their cue from these subtle signs of adaptation, the women have switched to growing herbs, which their grandparents used to cultivate on a small scale in the oasis, Fatiha says.

Their herb plot is just one site in a wider network of herb-growing projects across the Tafilalet region, run by UN Women, the organization that advocates for the rights of women and girls globally. The women hope to expand their project to other areas. “We are very happy, but we need more potential, we want to go to markets, to other places,” Fatiha says. She hints at a major concern surrounding oases: If people don’t have a strong incentive to stay, they won’t. And without humans tending these habitats, they are fated to fall into the desert’s grip.

Beyond Morocco, farmers in eastern Tunisia’s Chenini Gabes oasis are using plant-breeding techniques to strengthen their crops — and, by extension, the oasis — against rising temperatures and low rainfall. A local organization called the Association de Sauvegarde De L’Oasis De Chenini Gabes (ASOC), which is part of the RADDO network, is encouraging farmers to breed their own seeds to create diversity for more resilient crops. “If you have a large genetic resource, you can adapt your crops more easily,” says Cheneval of RADDO.

The resulting seed varieties are stored in a seed bank for future use. And, to ensure that the skills of seed diversification reach other regional oases, ASOC has equipped a core group of farmers to teach these breeding techniques to others.

The realization that oases are now the final frontier against desertification in the Maghreb appears to be sinking in. In Marrakech, the Moroccan government has launched the Sustainable Oasis Initiative, which, among other things, aims to carry out a full census of oases and emphasizes the need to prioritize oases as climate adaptation funding becomes available. Without these kinds of actions and global support, however, some fear that the centuries-old battle to maintain the oases will be lost.

“Oases are indicators of ability to deal with the changes that are taking place today,” says Cheneval. “Ultimately, the disappearance of these systems will reflect badly on our ability to cope with climate change.”

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online

at:

http://e360.yale.edu/feature/a_drive_to_save_sahran_oases_as_climate_change_takes_a_toll_cop22/3063/

