



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

19 May – 25 May 2014

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❖ UN condemns water cuts in Syria's Aleppo

UN Secretary-General Ban Ki-moon condemned opposition fighters for cutting water supplies to the besieged Syrian city of Aleppo and called for services to be restored immediately, AFP reported Friday (May 16th).

Ban's office said water supplies had been cut for eight days, depriving at least 2.5 million people of access to water safe for drinking and sanitation.

Al-Qaeda's Syrian branch, al-Nusra Front (ANF), was among the groups that cut the supplies.

In a statement, Ban's office said "preventing people's access to safe water is a denial of a fundamental human right".

"Deliberate targeting of civilians and depriving them of essential supplies is a clear breach of international humanitarian and human rights law," it said.

Ban called on all parties to "refrain from targeting civilian facilities and infrastructure", the statement said.

“UN condemns water cuts in Syria's Aleppo”, 20/05/2014, online at: http://al-shorfa.com/en_GB/articles/meii/newsbriefs/2014/05/20/newsbrief-04

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❖ Water Crisis Looms In Iran

Negin (not her real name) is doing her part to avert a major water shortage in Tehran this summer.

The 35-year-old mother of two is taking official calls to be economical when it comes to water use -- and warnings that supplies in the Iranian capital could be restricted if the calls are not heeded -- very seriously.

"If I have dirty water from washing the clothes, I use it to wash the floors," she says. "I've also taught my children to be mindful of their water usage when they brush their teeth."

Negin does what she can to conserve water, but she wonders if it is a futile exercise.

"Most people waste water," she says of her fellow Tehran residents. "Just the other day I saw a man washing the sidewalk in front of his house and letting water run from the hose."

Warnings about water shortages are nothing new to Iranians, whose country is located in an arid and semi-arid region with little rainfall and frequent droughts.

This year, however, officials have said the problem is particularly dire, warning that water shortages could affect up to half of the country's population of 75 million.

Climate change, population growth, mismanagement, wasteful irrigation practices, and the depletion of groundwater resources are among the reasons cited for the worsening situation not just in Tehran, but throughout Iran.

Worse Than Critical

Several bodies of water, including the Zayandehrood River and Orumieh Lake, have either shrunk or dried up as the result of drought and water diverted for agricultural purposes.

On May 4, Iranian Energy Minister Hamid Chitchian was quoted by the state media as saying that water resources were in a condition that was worse than critical.

Addressing parliament, Chitchian said Iran's renewable water resources had decreased over the past 10 years from 130 billion cubic meters to 120 billion.

He lamented that Iranians consume 80 percent of the country's renewable water resources annually. Whereas "60 percent" is considered critical," he said, "we consume 20 percent more than what is in the world considered a [water] crisis."

In an effort to prevent the situation from worsening, officials have told residents in Tehran and other major cities to cut back on water use.

On May 14, Tehran's governor, Hossein Hashemi, warned that if citizens in the Iranian capital did not reduce their water consumption by 20 percent, water cuts and water rationing would be imposed.

In early April, the CEO of Tehran's regional water company, Khosro Erteqai, announced a "sharp drop" in water levels at two major reservoirs serving Tehran's metropolitan area, which has a population of about 22 million.

He warned that if citizens in the provinces of Tehran and Alborz did not cut back on consumption, authorities would be forced to reduce water pressure in pipelines to reduce supplies.

Deputy Energy Minister Rahim Meydani has warned that Tehran, along with 10 major cities including Isfahan, Shiraz, and Yazd, are at risk of water shortages.

Consumption Still Soaring

Yet the warnings have apparently not had much effect on water usage.

The official news agency IRNA reported on May 14 that water consumption in the Iranian capital

had already hit a one-day high for the year.

"Unfortunately, based on released figures, on Friday, May 9, water consumption in Tehran hit a record and reached 2,992,000 cubic meters," the agency wrote. "It marks a new record in water consumption from the beginning of the current [Iranian] year."

The report said that the figure marked an 8 percent increase from the same day a year ago.

Tehran-based environmental expert and university professor Esmail Kahrom told RFE/RL that authorities should introduce fines for households with high water consumption.

"Several years ago there was water rationing [in Tehran]. Each day, water would be cut for several hours in different parts of Tehran," Karhom says. "Out of fear of running out of water, people would store so much water [before the scheduled cuts] that their consumption ended up being higher than usual."

Professor Kahrom says a national-awareness campaign is needed for Iranians to realize the seriousness of the situation.

"The only way to cope with this crisis is through rationing and serious limitations [on water use]," he adds. "Authorities should [also] demonstrate to the people that we really don't have water."

Kahrom says a balance should be created between consumption and the country's available water resources.

Fatemeh Zafarnejad, an environmental researcher in Tehran, told RFE/RL's Radio Farda that only "national resolve" can help solve the water crisis.

"We should take the water issue much seriously because it will cause a huge crisis," Zafarnejad said. "By introducing changes in water management we should be able to overcome the problem."

Gary Lewis, the United Nations resident coordinator in Iran, has called water management one of Iran's biggest environmental challenges.

Negin, meanwhile, says she's hoping to see a change in people's attitudes when it comes to conservation.

"I hope people start to realize that it's up to us to change our habits and be more mindful of the environment," she says.

“Water Crisis Looms In Iran”, 19/05/2014, online at: http://www.rferl.org/content/iran-water-crisis-drought/25390465.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=d8694e8523-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-d8694e8523-250657169

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❖ Ex-MP 'pilfered public money' in Iraq deal

Italy's former environment minister has been placed under house arrest for alleged embezzlement involving an Iraq water deal.

Corrado Clini, who served as environment minister with Mario Monti's government, allegedly stole over €3 million from public money that was meant to fund a water purification project in Iraq, Corriere della Sera reported.

A businessman from Padua, whose company oversaw the deal in Iraq's Tigris and Euphrates basin, was also placed under house arrest by Italy's Finance Police on Monday morning, the newspaper added.

They face charges of embezzlement against the Italian ministry of environment, land and sea.

Clini also served as the ministry's director general, and between 2000 and 2001 he co-chaired the G8 task force on renewable energy.

Clini is the second former Italian politician to be arrested within the last month. In early May, Claudio Scajola was arrested in Rome for allegedly helping Amedeo Matacena, a Calabrian businessman escape a five-year jail term after his conviction for mafia association was handed down last year.

"Ex-MP 'pilfered public money' in Iraq deal", 26/05/2014, online at: <http://www.thelocal.it/20140526/ex-mp-arrest-for-embezzlement-over-iraq-deal>

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❖ **U.N. Decries Water as Weapon of War in Military Conflicts**

UNITED NATIONS, May 19 2014 (IPS) - The United Nations, which is trying to help resolve the widespread shortage of water in the developing world, is faced with a growing new problem: the use of water as a weapon of war in ongoing conflicts.

The most recent examples are largely in the Middle East and Africa, including Iraq, Egypt, Israel (where supplies to the occupied territories have been shut off) and Botswana.

Secretary-General Ban Ki-moon last week expressed concern over reports that water supplies in the besieged Syrian city of Aleppo were deliberately cut off by armed groups for eight days, depriving at least 2.5 million people of access to safe water for drinking and sanitation.

“Preventing people’s access to safe water is a denial of a fundamental human right,” he warned, pointing out that “deliberate targeting of civilians and depriving them of essential supplies is a clear breach of international humanitarian and human rights law.”

In the four-year [Syrian civil war](#), water is being used as a weapon by all parties to the conflict, including the government of President Bashar al-Assad and the multiple rebel groups fighting to oust him from power.

The conflict has claimed the lives of over 150,000 people and displaced nearly nine million Syrians.

The violation of international humanitarian law in Syria includes [torture](#) and deprivation of food and water.

[Maude Barlow](#), who represents both the [Council of Canadians](#) and [Food and Water Watch](#), told IPS water is being increasingly and deliberately used as a weapon of war in recent and ongoing conflicts.

During the Iran-Iraq war of the 1980s, the Mesopotamian Marshes were drained, she said.

Iraqi President Saddam Hussein drained them further during the 1990s in retribution against Shias who hid there and the Marsh Arabs (Ma’dan) who protected them, she pointed out.

The privatisation of water in Egypt and its diversion to the wealthy was a major factor in the “Arab Spring” uprising, said Barlow, a former senior advisor on water to the president of the General Assembly back in 2008/2009.

Thousands suddenly had no access to clean water and “thirst protests” were partial catalysts for the large uprising.

Also, more than four decades of Israeli occupation have made it impossible to develop or maintain infrastructure for water in Gaza, causing the contamination of drinking water and many deaths, she declared.

Barlow also said Botswana used water as a weapon against the Kalahari bushmen in an attempt to force them out of the desert, where diamonds had been discovered.

In 2002, the government smashed their only major water borehole, a terrible act that was only overturned in court years later, she noted.

Last week, Anand Grover and Catarina de Albuquerque, two U.N. experts on water and sanitation, said interference with water supplies even in the context of an ongoing conflict is entirely unacceptable.

They said the city of Aleppo has had intermittent access to water from the beginning of May 2014, with a total cut in supply on May 10, resulting in many, perhaps a million people, left without access to safe water and sanitation.

This affected homes, hospitals and medical centres, the two U.N. experts said.

The cuts appeared to come about as a result of deliberate interference with the water supply, with conflicting allegations suggesting that some armed opposition groups and the government of Syria have both been responsible at different times and to differing degrees, they pointed out.

Barlow told IPS the al-Assad government’s denial of clean water is consistent with its history of using water to punish its enemies and reward its friends.

In 2000, the Syrian regime deregulated land use and gave vast quantities of land and water to its wealthy allies, severely diminishing the water table and driving nearly one million small farmers and herders off the land, she added.

Ironically and tragically, many of them migrated to Aleppo where they are being targeted again, said Barlow,

She also said water has also been deployed as a weapon of “class war.”

Many thousands of inner city residents unable to pay their water bills have had their water services cut in Detroit, Michigan, in the United States, and more recently, as a result of Europe's austerity programme, in Spain, Greece and Bulgaria.

"Water as a weapon of war is a strong argument to governments and the U.N. they must make real the human right to water and sanitation, regardless of other conflicts taking place," said Barlow.

Meanwhile, since 1990, almost two billion people globally have gained access to improved sanitation, and 2.3 billion have gained access to drinking water from improved sources, according to a new U.N. report released last week.

The joint report by the [U.N. Children's Fund](#) and the [World Health Organisation](#) said about 1.6 billion of these people have piped water connections in their homes or compounds.

Titled "[Progress on Drinking Water and Sanitation: 2014 Update](#)," the report said more than half of the global population lives in cities, and urban areas are still better supplied with improved water and sanitation than rural ones.

"But the gap is decreasing."

In 1990, more than 76 percent of the people living in urban areas had access to improved sanitation, as opposed to only 28 percent in rural ones.

By 2012, 80 percent urban dwellers and 47 percent rural ones had access to better sanitation.

"Despite this progress," the report warned, "sharp geographic, socio-cultural, and economic inequalities in access to improved drinking water and sanitation facilities still persist around the world."

"U.N. Decries Water as Weapon of War in Military Conflicts", 19/05/2014, online at: http://www.ipsnews.net/2014/05/u-n-decries-water-as-weapon-of-war-in-military-conflicts/?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=d8694e8523-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-d8694e8523-250657169

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❖ Conflict deepens Middle East water crisis

WASHINGTON - The Middle East's seemingly endless conflicts are diverting attention and resources from a graver long-term threat that looms over the whole region: the growing scarcity of water. And the situation will get worse before it gets better - if it ever does get better.

Years of war, careless water supply management, unchecked population growth, ill-advised agricultural policies, and subsidies that encourage consumption have turned a basically arid part of the world into a voracious consumer of water. The trajectory is not sustainable.

Those were the gloomy if unsurprising conclusions of a three-day conference on the subject in Istanbul last week. From Libya to Iraq to Yemen, too many people and too many animals have stretched water resources beyond their limits. Some countries where the urgency is greatest, including Syria and Yemen, are the least equipped to stave off serious water crises.

Jordan, always short of water, has been overwhelmed by a flood of refugees from Syria. Iraq, which once had ample water, has lost critical supplies to war and to dams built by Turkey upstream on the Tigris and Euphrates.

Egypt has twice as many people as it did 50 years ago, with no additional water resources. The isolated Gaza strip has been grappling with a water crisis for years. And Yemen's scarce water supply is being gobbled up by the unchecked production of qat, a high-water crop with no nutritional value. Chewing the mildly narcotic qat leaf is Yemen's national pastime. "If you give them more water, they'll just grow more qat," one gloomy conference participant said.

But not all the news is bad. Stable countries with lots of money, led by Saudi Arabia, are making notable progress in supply, management and consumer education.

Elsewhere, however, the prognosis is grim. No one predicted an outbreak of "water wars", or armed conflict over water supply, a specter that has often been evoked but has never materialized.

But at some point in the not too distant future, water shortages could provoke mass migrations, human hardship, crop failures and some form of "triage" among populations as governments are forced to allocate supplies, said conferees, who cannot be named due to conference rules.

It's not as if all this has gone unnoticed. The Middle East's water issue has been the subject of news articles, analyses by groups such as the UN Food and Agriculture Organisation, and studies by think tanks and humanitarian groups for years.

The Istanbul conference of scientists, policy analysts and academics from eight countries - conducted on an island in the Sea of Marmara under the title "High and Dry: Addressing the Middle East Water Challenge" by the Hollings Center and the Prince Muhammad Bin Fahd Strategic Studies Program at the University of Central Florida - is the latest of many such gatherings.

But little has come of them because the region has never been stable enough for sufficient time to make any comprehensive, multilateral solution possible.

According to analyses by the World Bank, the US State Department and others, a majority of the countries defined as "water-poor" - those with access to less than 1,000 cubic meters per person per year - are in the Middle East and North Africa.

The State Department also predicts that climate change will add to the problem by bringing "consistently lower levels of rainfall".

No government or international agency can increase rainfall or snow runoff. But the Istanbul conferees heard that the example of Saudi Arabia - the world's largest country without a river - shows that a great deal can be done in countries with deep pockets and enough time to focus on the issue.

Saudi Arabia reorganized its government in the 1990s to centralize water planning and management. Most of the country's water for personal and household use is supplied by massive desalination plants. The decision to build them, starting in the 1970s, was an obvious one for the kingdom.

But the plants are expensive to construct and operate, leaving them beyond the financial reach of a country like Yemen.

Saudi Arabia meanwhile leads the region in the recapture and reuse of wastewater. Under a new regulation from last year, for example, its giant dairy farms are required to operate on recycled water purchased from the National Water Company rather than on groundwater as in the past.

Once the world's fifth- or sixth-largest exporter of wheat - the production of which requires massive amounts of water - Saudi Arabia has banned the cultivation of wheat as of 2016 and is refocusing its agriculture on greenhouse production of vegetables and fruit.

Growing animal fodder crops such as alfalfa has been banned; owners of livestock are required to purchase imported fodder, conference participants said. Plagued by leaks in distribution pipes that drained off as much as 25% of the water it had, Saudi Arabia privatized its distribution network and encouraged foreign engineering and management companies to participate.

Saudi Arabia has raised the price of water for businesses and institutions, but it has not yet ended the subsidies for households that make water so cheap; there is little incentive to limit consumption.

Doing so would be politically risky in a country where subsidies for water, gasoline, and electricity are expected by a population that has no vote or other influence over the government.

Egypt, by far the most populous country in the region, has a different consumer attitude problem. Egyptians have taken the availability of water for granted since completion of the Aswan High Dam in 1970. As a result, they use water casually in the home and pump more irrigation water than is necessary onto their fields.

But Egypt's biggest concern now is Ethiopia's plan to construct a giant hydroelectric dam on the headwaters of the Nile, reducing the flow and the amount of water stored in Lake Nasser, behind the Aswan Dam.

Asked recently if negotiations over Nile water allocations were taking place between Egypt and the upstream countries, Foreign Minister Nabil Fahmy replied, "No. I wish they were."

Participants in Istanbul agreed that there is no single remedy for the water crisis. The available fixes range from the simple and obvious, such as consumer education and the installation of low-flow bathroom fixtures, to the aspirational, such as the development of desalination plants powered by solar energy, which are thus affordable.

As usual with such events, the organizers will prepare a paper outlining recommendations. The fact is, however, that solutions, even if available, will be hard to implement until the shooting stops, refugees are resettled, and governments are sufficiently stable to address them. That won't be soon.

"Conflict deepens Middle East water crisis", 21/05/2014, online at: http://www.atimes.com/atimes/Middle_East/MID-02-210514.html

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❖ Biggest Mideast crisis: Growing water scarcity

WASHINGTON—The Middle East’s seemingly endless conflicts are diverting attention and resources from a graver long-term threat that looms over the whole region: the growing scarcity of water. And the situation will get worse before it gets better—if it ever does get better.

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"Biggest Mideast crisis: Growing water scarcity", 24/052014, online at:

<http://www.businessmirror.com.ph/index.php/en/features/green/32627-biggest-mideast-crisis-growing-water-scarcity>

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❖ Learning the value of water in Israel

TEL AVIV - Crossing the Negev Desert in Israel by bicycle in 100-degree weather last month, the sun seared us and the wind scorched us. It was like riding into an oven.

There was hardly a green thing to be seen – few trees or shrubs – only a scattering of low, scraggly plants struggling for survival on an otherwise barren, brown, rocky landscape.

With perspiration pouring from our bodies, water was foremost in our thoughts.

In the dry Middle East, collecting, storing and making the best use of water is an age-old tradition. It's the only way desert cultures could grow food and survive the harsh, oppressive heat.

Thousands of years ago, cities of the ancient world were challenged to provide ample water supplies – enough for swimming pools and heated baths.

During our bike tour from the northern border with Lebanon and Syria down to the Red Sea on the borders with Jordan and Egypt, my friend Graeme and I observed numerous ancient ruins and studied their water sources.

At Masada, a mesa-top fortress built by King Herod just before the time of Christ, gutters were carved into sandstone walls to channel cherished rains into vast cisterns hewn from solid rock.

We climbed down long stairways into these cisterns and noted that the floors, walls and ceilings were plastered to seal in water and keep it clean of sediments.

On a side trip to Petra, Jordan, the canyon walls were carved with water channels to bring rain runoff into a city that supported thousands.

Israeli water technologies have gone far beyond what Herod's architects and the Nabatean city builders of Jordan contrived in the ancient world, but they hark back to a conservation ethic for water that leads the world today.

And what we saw from the seats of our bicycles was no less than an agricultural wonder.

The lush greenery of kibbutzim (traditional communal societies) or moshavs (collective farms) stood out like oases. Many kibbutzim are lush and flowering, not only with food crops, but with decorative horticultural marvels that rival the mythical Babylonian Gardens.

We were drawn to kibbutzim like flies to honey because they provided us with water and food. They also offered an inspiring look at intensive agriculture practiced with extreme water efficiency and social cohesion among those who live there.

The lessons from Israel could well be applied to the West and the Colorado River Basin, which is struggling with drought.

Jim Pokrandt, the communications and education director for the Colorado River District, based in Glenwood Springs, spent two weeks in Israel last December traveling with his wife.

Pokrandt was not visiting Israel as a water expert, but he gleaned, as I did, that Israel is intensively farmed with state-of-the-art irrigation systems.

“My wife and I stopped in kibbutzim and chatted with the people there,” Pokrandt said. “We learned that through drip irrigation, date palms can produce a product in 20 years. In the north we saw a lot of grazing, and in the Negev Desert we saw lots of vegetables. The water comes from wells, recycling and desalinization.”

Pokrandt said that the American West shares a feature with Israel for being just as dependent on limited water. Among traditional users relying on the Colorado River, agriculture is the dominant customer, accounting for approximately 88 percent of the water consumed in Colorado.

“Including transbasin diversions, the Colorado River helps irrigate nearly two-thirds of Colorado’s total irrigated lands,” Pokrandt said. “Major crops grown with Colorado River water include grass and alfalfa hay, grains, vegetables and fruit.”

When Pokrandt talks to people about a water crisis in the American West, he reflects on the Israeli model.

“I tell them I spent two weeks in Israel and that I’m not worried about water over here,” Pokrandt said. "We’ll figure it out like they did – with water re-use, cluster development, and desalination. We can also be innovative with our uses of water.”

There may be no better model for water efficiency than Israel. The country is intensely farmed and scrupulously watered. Most important, however, is an overarching conservation ethic in a land where water has long been valued as a precious commodity.

Sustainable agriculture in Israel has long been a national priority that maximizes arable land for food production – with limited water. That’s why most of the country is plumbed for drip irrigation, a technique developed in Israel for watering individual plants with minimal water to avoid loss from seepage and evaporation. Piped water is also easier to monitor, regulate and protect.

Huge purple irrigation pipes are seen across Israel’s countryside where farms, orchards and vineyards draw water allocations and use them sparingly to incredible effect. Huge covered orchards in the north and vast date palm plantations in the south reveal a nation of skilled and studied agronomists.

Until recently, modern Israel had long relied on a central river system – the River Jordan – which flows south through the Great Rift Valley. More than the metaphorical boundary to the Promised Land, the Jordan has served as a chief source of Israel’s fresh water.

The Jordan gathers tributaries from the northern part of the country, surrounding the heights of Mt. Hermon, the highest mountain in Israel at 9,230 ft, which stands sentinel over the border with Syria. These waters serve myriad uses many times over on their way south to the Dead Sea.

Below Galilee we pedaled down the West Bank of the Jordan, a stone’s throw from the Jordanian border. Here the biblical river eventually tapers down to the equivalent of an irrigation canal by the time it reaches the Dead Sea 1,500 feet below sea level – the lowest place on the surface of the earth.

The Dead Sea is known for its buoyancy because its salt content is 9.6 times that of the world’s oceans, with 34.2% salinity. There is no outflow, so salts are concentrated through evaporation.

The mineralization of the Dead Sea, which is dropping at the rate of about one meter per year (3.2 feet), is accelerating due to the Jordan's flow being dramatically reduced by upriver draws for agricultural and municipal purposes.

The Jordan River system, though only 124 miles long (223 miles if you count the meanders), reminded me of the Colorado River system in that they both serve arid regions with limited water. The Colorado is a lot longer (1,450 miles) and more complex than the Jordan, but the challenges of administering these rivers are similar.

Like the Jordan when it reaches the Dead Sea, the Colorado's flow is greatly reduced when, or if, it reaches the Gulf of California in Mexico, where the Colorado River delta is rarely recharged with fresh water from the mountains.

The Israelis have made the desert bloom by using high-tech irrigation techniques with water from varied sources. In addition to the Jordan, supplies come from wells, recycled wastewater and from the desalination of saltwater, in which Israel is a world leader.

In 2013 more than a third of Israel's tap water came from the Mediterranean Sea and briny wells. Dozens of Israeli water innovators work intensively on monitoring and measuring flows and designing filtration systems for everything from microbial organisms to acidic chlorine from swimming pools.

Innovators have developed ultrasonic technologies, micro generators inserted into water pipes to capture energy, pressurized systems and valve designs, ultraviolet disinfection, contamination detection, and more.

Today, the Israeli Ministry of Industry, Trade and Labor lists some 166 water tech enterprises, including 91 companies offering water efficiency solutions, 50 companies specializing in wastewater reuse and desalination, and another 25 offering water control and command systems.

Even as Haaretz, the English-language news source, reported recently of an abundance of water in Israel due to desalination, the state continues to advocate for water efficiency as a national ethic that reflects a slogan known traditionally in Israeli households: “Don’t waste a drop.”

This strict ethic of developing water supplies and maintaining efficiency exists because water has long been key to the survival of Israel. Water innovation is the equivalent of a national defense industry, and desalination is the country’s new lifeblood.

The largest desalination plant of its kind in the world, using reverse osmosis, is at Hadera, a city on the Mediterranean Sea north of Tel Aviv. Desalination has been practiced in Israel since the 1930s, but today’s facilities are fueled by a recently discovered offshore field of natural gas in the Mediterranean.

On a particularly broiling day during our ride through the Negev Desert, which covers about one-third of Israel, we stumbled upon a paradise-like oasis at kibbutz Neo Smadar. Here the desert blooms where a temple-like arts center stands prominently with a phallic cooling tower.

Heat exhausted and fly-bitten, we were welcomed there for two nights of camping. More important, our visit coincided with the second Seder dinner of the Passover holidays.

Dining on an outdoor patio with 250 kibbutz workers, and appreciating a cooling desert breeze, we felt an uplift in our spirits that went beyond the delicious organic food and drink we were served, much of which originated from the kibbutz fields, orchards and vineyards.

Only after my return home did I learn that Eden Vardy, founder and director of Aspen TREE, a local non-profit focused on creating sustainable communities, had lived and worked at Neot Smadar six years ago.

As a result of his kibbutz experience, Vardy knows Israel’s water ethic firsthand. Born in Tel Aviv in 1986, his family moved to Aspen in 1988. He returned to Israel in 2008 to explore his native land.

Vardy, who grows food year-round at the greenhouse at Cozy Point Ranch, first studied desert agriculture at kibbutz Lotan in the Arava Desert north of Eilat, near the Red Sea, on the border with Jordan. Here he learned the benefits of drip irrigation and intensive farming and livestock raising.

“Drip irrigation started in Israel and it’s the best irrigation school in the world – leading the way, out of necessity,” Vardy said.

Vardy then spent six months in the Arava Desert, where he witnessed the application of “black water” for date-palm plantations.

Black water is the effluence from raw sewage, whereas gray water comes from non-septic drains like kitchen sinks. The kibbutz experimented with black water to see if the date palms would survive with that water source.

“There was a lot of research going on in the desert – growing dates and feeding them with different levels of black water,” Vardy said. “At one kibbutz they constructed wetlands to handle effluent for 500 people. We also built mini gray water systems and used composting toilets.

“The idea is not to use water, but if you do, use it as many times as you can. Using every drop – twice – is also a key part of permaculture, which calls for using resources many times before they leave a site.”

For Vardy, the big difference between farming in Israel and the Western U.S. is in the manner in which water is regarded.

“The difference is in the mentality,” he said. “Here, people are trying to get as much water as they can. There they try to use as little as possible. Israel has had to rely on itself with limited water for the whole country. Here it’s ‘use it or lose it.’”

“Learning the value of water in Israel”, 23/05/2014, online at: <http://aspenjournalism.org/2014/05/23/learning-the-value-of-water-in-israel/>

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❖ Agriculture and Nature Coexist at the Galilee's Eilon Reservoir

Agricultural advancement, environmental conservation and stunningly beautiful natural surroundings characterize the Eilon Water Reservoir in northern Israel, which was established by KKL-JNF with the support of the Jim Pattison Fund of Vancouver, Canada.

The donor's two children, Jim Pattison Junior and Cindy Lambier, visited the Eilon Reservoir as part of a week-long tour of Israel during which they saw firsthand the projects established thanks to their family, and investigated new possibilities for further donations to development in Israel.

The guests met up with Zeev Kedem, Director of KKL-JNF's Resource Development Department, who explained that the [Eilon Reservoir](#) is part of a network of some 240 [reservoirs](#) that KKL-JNF has established throughout the length and breadth of Israel. "If we want a [dry country like this one to be green](#), we have to find alternative water resources," he said. "These reservoirs contribute to both agriculture and the environment, and they also help the local people to make a living." He pointed out that Israel reclaims more of its water than any other country in the world and recycles 80% of its wastewater for agricultural use.

Thanks to the reservoir, Kibbutz Eilon has expanded the area of its avocado grove from 42.5 acres to around 100 acres. "This is a real contribution to the economy of the kibbutz," said Danny Haddad, who is in charge of operations at the reservoir. No lengthy explanations are necessary to enable visitors to understand the reservoir's importance to farming: it's enough just to look up, glance around and see the green orchards that envelop the reservoir and the kibbutz residential areas.

"Agriculture and Nature Coexist at the Galilee's Eilon Reservoir", 25/05/2014, online at: <http://www.jpost.com/Green-Israel/At-the-UN-Climate-Change-Conference%E2%80%9393COP16/Agriculture-and-Nature-Coexist-at-the-Galilees-Eilon-Reservoir-353298>

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❖ **Israel, Greek, Cypriot environment ministries to cooperate on Mediterranean pollution prevention**

Ministers to sign an agreement that will foster cooperation, with a focus on preventing pollution in the sea from natural gas drilling and economic activity.

Environmental Protection Minister Amir Peretz and his Greek and Cypriot counterparts declared their intent to sign a tripartite agreement toward protecting the Mediterranean Sea, his ministry announced on Wednesday.

Peretz and his colleagues, the Cypriot Agriculture, Natural Resources and Environment Minister Nicos Kouyialis and the Greek Environment, Energy Climate Change Minister Yiannis Maniatis, plan to sign an agreement in June that will foster cooperation on Mediterranean environmental issues, with a focus on preventing sea pollution from natural-gas drilling and economic activity.

By establishing such a joint force, the ministers aim to prevent disasters such as the 2010 oil spill that hit the Gulf of Mexico, the ministry said.

The ministers declared their intentions at the Union for the Mediterranean Ministerial Meeting on Environment and Climate Change in Athens on Tuesday. The Union for the Mediterranean was established by 43 European and Mediterranean governments in 2008 with a mission of promoting regional cooperation projects and revitalizing the Mediterranean.

More than 40 ministers and senior representatives from Europe and the region attended the conference, including representatives from Egypt, Lebanon, Morocco, Turkey and the Palestinian Authority.

In addition to advocating environmental cooperation around the Mediterranean, Peretz emphasized on Tuesday his disappointment in the crisis surrounding the peace talks to the other officials.

“The sea is the same sea, and the neighbors will remain the same neighbors, so we have to find a way to live together, country next to country,” he said. “A Palestinian state is not only in the interest of Israel and the Palestinians, but it is also in the interest of all the countries that take part in this conference.

“The region’s countries must unite so that widespread economic activity in the Mediterranean Sea will leverage cooperation for peace and for the environment,” Peretz added.

Jordanian Environment Minister Taher al-Shakhshir welcomed his colleague’s words and reinforced the need for peace and the establishment of two states for two peoples, the Israeli ministry said.

“Israel, Greek, Cypriot environment ministries to cooperate on Mediterranean pollution prevention”, 21/05/2014, online at: <http://mideastenvironment.apps01.yorku.ca/2014/05/israel-greek-cypriot-environment-ministries-to-cooperate-on-mediterranean-pollution-prevention-jerusalem-post/>

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❖ Water Insecurity, Climate Change and Governance in the Arab World

The Middle East has been among the most arid regions of the globe for several thousand years. Nevertheless, recent extreme events portend a significant decline in the region's available water resources and a meaningful change in its climate. In 1992, centuries-old underground springs feeding the Azraq wetlands in Jordan stopped flowing entirely. In the years since, similarly age-old springs in other parts of Jordan, including Jerash and Kerak, have also stopped flowing. During the 1990s, the Khabour River in Syria, a major tributary of the Euphrates, completely dried up for several years. And from 2006 to 2010, a ruinous drought severely ravaged areas of Jordan, Israel, Syria, Iraq and Turkey, displacing millions of people and devastating livestock and crops.

A strong body of scientific research supports the overall drying trend suggested by these events. Relying on global and regional climate simulations, several recent studies indicate that the countries of the Eastern Mediterranean and North Africa are likely to experience substantially higher mean annual temperatures, lower annual levels of precipitation and increasing levels of water stress during the twenty-first century.¹ In a study from the National Oceanic and Atmospheric Administration (NOAA), scientists have discovered that a notable trend towards a drier climate in the Mediterranean Basin is already occurring.² Relying on three separate datasets of monthly precipitation records from 1900 to 2010, the study concludes that the land areas around the Mediterranean Sea are currently experiencing a pattern of increased drought, with a clear trend toward drier conditions emerging in the 1970s. Furthermore, a recent World Bank report on water scarcity in the Middle East and North Africa illustrates the growing danger of water insecurity in the Arab World. Describing the Middle East and North Africa as the most water-scarce region of the world, the report classifies nine of the region's 14 countries as "hyper-arid."³ In each of these nine countries, the total renewable water resources per capita are less than 500 cubic meters, below the level of "absolute scarcity," the lowest threshold on the water-availability scale. Even more important, the observed and projected trends toward increased aridity described by the scientific studies above suggest that the number of Arab countries below the level of absolute scarcity will grow in future years.

In an effort to identify and illustrate some of the potential challenges that increasing water scarcity and projected climate changes pose for Arab governments, this article offers a preliminary analysis of

water politics in the Hashemite Kingdom of Jordan.⁴ It is one of the most water-poor countries in the Middle East and the most water-stressed Arab country in the Levant. It possesses no major surface water resources and receives less precipitation than its Levantine neighbors to the west and north. On average, only 7 percent of the kingdom receives more than 200 millimeters (mm) of precipitation per year, versus 45 percent of Syria and nearly 90 percent of Lebanon.⁵

Second, Jordan is located in an area of the Middle East where some of the most severe effects from projected global and regional climate changes are expected to occur. According to regional climate-hydrology simulations conducted by Suppan et al., the areas of the Upper Jordan River Basin could see "mean annual temperature increases up to 4.5 degrees Celsius and 25 percent decreases in mean annual precipitation" by the end of the twenty-first century.⁶ Furthermore, there is strong evidence that the climate of the Mediterranean Basin is already becoming drier, making the challenges that Jordan and other countries in the basin face more than hypothetical.⁷

Third, Jordan is a valuable case for illustrating how government policy can play a greater role than natural events in the creation of water scarcity. The Jordanian government does a poor job managing demand for water, particularly in rural areas. Consequently, an analysis of Jordan will illustrate how government policy can either exacerbate or ameliorate the impact of a changing climate. In addition, Jordan is primarily seeking to solve its water crisis by finding more sources of supply. This is a common strategy among Arab governments, and analyzing the Jordanian case will illustrate some of the advantages and disadvantages of such an approach. Finally, and most important, Jordan is a valuable case for investigating the potential for the mismanagement of water resources and a changing climate to erode the foundations of Middle Eastern political regimes.

In the remainder of the article, the ways in which the Jordanian monarchy has used water and land as tools for generating political support will be explained. In addition, two specific examples of the Jordanian government's failure to adequately manage groundwater will be discussed: the failed 2002 Groundwater Control Bylaw and the destruction of the Azraq wetlands. The article will conclude with a detailed discussion of four critical challenges that climate change and increasing water scarcity pose for Arab states: managing groundwater resources more effectively, satisfying growing urban demand for water, coping with the potential for increased social and political instability, and meeting the challenge of ineffective governance. Overall, the article demonstrates that climate change and

growing water insecurity pose significant threats to the patron-client links that Arab leaders have built up over time with key social groups such as tribes, farmers and urban water consumers, particularly those in areas with poorly maintained water infrastructure.

“Water Insecurity, Climate Change and Governance in the Arab World”, May 2014, online at:
<http://www.mepc.org/journal/middle-east-policy-archives/water-insecurity-climate-change-and-governance-arab-world>

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❖ Watercourse Convention Set to Enter into Force on 17 August 2014

Well, it finally happened. On 19 May 2014, Vietnam became the 35th party to the 1997 UN Convention on the Non-navigational Uses of International Watercourses. This means that on 17 August 2014, 90 days after that 35th ratification was deposited, the Convention will come into force.

Long in coming, the Convention's success was never guaranteed. Adopted by the UN General Assembly in 1997, the Convention appeared set for ratification as 103 of the UN's Member States voted in favor of it. Only three countries voted against – Burundi, China, and Turkey – while 27 nations abstained and 33 were absent from the vote. That vote, however, masked long-standing disagreements over how transboundary fresh water resources should be allocated and managed. In particular, upper and lower riparians disagreed between the primacy of the Convention's cornerstone principles of equitable and reasonable use – favored by most upper riparians – and the doctrine of no significant harm – preferred by most lower riparians (for a more detailed analysis of the UNGA vote on the Convention, as well as the disparate interests, see my article).

Lackluster support in the years following the Convention's inception suggested to some that the treaty was doomed to failure. More recently, though, the rate of ratifications more than doubled (18 in the first 12 years in comparison to 17 over the past five years). While that resurgence may have been due, in part, to the efforts of World Wildlife Fund (which in around 2009, added implementation of the Convention to its advocacy agenda), it also suggests a broadening recognition that nations have an obligation to cooperate over transboundary freshwater resources. Maybe it's the threat of climate change, or concerns over dwindling domestic water resources. But, the fact that states are willing to bind themselves to the procedural and substantive norms of the Convention is a promising sign.

Entry into force of the Convention, though, is not the last word on the matter. In fact, this milestone raises as many new questions as existed leading to its implementation. For example, what does the geographic distribution of member states indicate for the global success of the treaty? Of the 35 ratifications, the vast majority are from either Africa (12) or Europe (16); only two ratifying parties are found in Asia and none come from the American hemisphere; five others are from the non-African Middle East region, albeit a total of eight MENA nations are now a party to the Convention.

At the very least, this distribution suggests a certain geographic bias toward (and against) the Convention.

In addition, what will implementation of the Convention mean in practice? How will nations implement its mandates within their borders and in relation to riparian neighbors? Why have nations in the Americas and Asia eschewed ratification? What does the entry into force of the Convention mean for the UNECE Water Convention, which is already in force in much of Europe and on 6 February 2013, opened its membership to the rest of the world? And, what will the Convention's implementation mean for existing regional and local transboundary freshwater agreements?

In the coming weeks, the IWLP Blog will host a series of essays addressing many of these intriguing questions. We have invited some of the most knowledgeable scholars and practitioners to offer their perspectives on the Convention's imminent entry into force as well as on its future. As part of this series, we invite you to participate in the conversation by submitting comments at the bottom of each essay and add your own perspectives and opinions to the discussion. As you formulate your thoughts, you might want to review a prior series hosted by the IWLP Blog and prepared by Dr. Alistair Rieu-Clarke and Ms. Flavia Loures (see here and here).

The entry into force of the Convention is a significant landmark development in the international community's efforts to better and peacefully manage transboundary fresh water resources. Whether this achievement translates into improved and more peaceful cooperation is a future that has yet to be written.

"Watercourse Convention Set to Enter into Force on 17 August 2014", May 2014, online at: <http://www.internationalwaterlaw.org/blog/2014/05/22/watercourse-convention-set-to-enter-into-force-on-17-august-2014/>

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❖ Egypt's per capita water share falls 60 pct in 66 years: CAPMAS

Egypt's annual water quota per capita has drastically declined by 60 percent in the last 66 years to reach 663 cubic metres, reported state-owned statistics agency CAPMAS Wednesday.

In its latest report, titled “Water Resources and Means to Rationalise their Use,” CAPMAS revealed that each Egyptian's annual share of water declined from a water surplus of 2,526 cubic metres in 1947 to a sufficient level of 1,972 cubic metres in 1970, and then water poverty with 663 cubic metres in 2013.

Egypt's population was 19 million in 1947, swelling to 35.5 million in 1970 and reaching 85 million in 2013.

The United Nations asserts that a population where per capita annual water resources are below 1,000 cubic metres faces water scarcity.

By 2025, an Egyptian's share in annual water will drop to 582 cubic metres as forecasted by CAPMAS. A level that approaches absolute water scarcity at 500 cubic metres according to the UN figures.

In 2012, the International Fund for Agricultural Development (IFAD) warned Egypt could face large-scale drought by the end of the century if it fails to make efficient use of its water.

In addition, temperature fluctuations could prompt a 20 percent drop in rainfall.

Since 2002, water resources available for Egyptians increased by almost 24 percent annually to reach 74.5 billion cubic metres.

The share in the Nile River water resources remains the main source of potable water for Egyptians at two thirds of the country's water resources or 55.5 billion cubic metres annually.

Recycling agriculture drainage water and groundwater are the other two main sources of water for Egyptians, which amount to 9.2 billion cubic metres and 7.5 billion cubic metres respectively.

Other sources include recycling wastewater (1.3 billion cubic metres) and salt water desalination (60 million cubic metres).

But efficient use of the country's resources is not the only challenge facing Egyptians.

In 2011, Ethiopia started construction of a dam set to be the biggest hydroelectric dam in Africa, producing as much as 6,000 megawatts of energy.

Egypt has repeatedly expressed concern that the dam will affect its share of Nile water. Ethiopia insists this will not happen.

Agriculture, meanwhile, is the biggest user of water, consuming more than 80 percent of water resources available to Egypt.

"Egypt's per capita water share falls 60 pct in 66 years: CAPMAS", 21/05/2014, online at: <http://english.ahram.org.eg/NewsContent/3/12/101910/Business/Economy/Egypt's-per-capita-water-share-falls--pct-in--years.aspx>

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❖ US, EU want Egypt, Ethiopia to restart dam talks

ADDIS ABABA – Diplomats from the U.S. and E.U. are shuttling between Ethiopia and Egypt in hopes of persuading the two countries to restart tripartite talks on Addis Ababa's multibillion-dollar hydroelectric dam project on the Nile River, an Ethiopian official has said.

"E.U. and U.S. diplomats told us that they wanted to help peace in the region," Fekahmed Negash, Boundary and Trans-boundary Rivers Director at the Ethiopian Ministry of Water, Energy and Irrigation, told Anadolu Agency on Tuesday.

A tripartite committee – including representatives from Ethiopia, Sudan and Egypt – was drawn up in 2011 and tasked with assessing the dam's possible environmental, economic and social effects on downstream countries Egypt and Sudan.

But its work came to a standstill in January over differences between Ethiopia and Egypt, the latter of which fears the \$6.4-billion dam will reduce its traditional share of Nile water.

Aaron Salsburg, the U.S. State Department's special coordinator for water resources, and E.U. representative to the African Union Alexander Rondos returned to Addis Ababa from Egypt where they spoke with senior officials.

Before going to Cairo, the two diplomats were in Addis Ababa last Friday where they discussed the issue with senior Foreign Ministry and Water Ministry officials.

"Topics discussed included ways of restarting tripartite consultations among Ethiopia, Egypt and Sudan... and implementation of the Nile Basin Initiative, particularly that of the Eastern Nile Subsidiary Action Program (ENSAP)," Negash told Anadolu Agency by phone.

"Before he left for Cairo, Salsburg gave us assurances that his country did not have a stand concerning the dispute over the Nile," Negash said. "But both the U.S. and the E.U. informed us that they had a stake in regional peace."

"Now that the two diplomats are returning [to Addis Ababa], we expect a report from them as to Egypt's stand concerning construction of the Grand Ethiopian Renaissance Dam project and on the resumption of the tripartite deliberations," he added.

"If Egypt changes its stance and wants to come back to the tripartite talks, we will welcome it with open arms," he said. "If there is any proposal conveyed by Egypt, we will study it against our national interest and give a decision."

When completed in 2017, the Grand Renaissance Dam will have a 6000-megawatt production capacity, according to Ethiopian government sources.

Addis Ababa says the dam will benefit downstream states Sudan and Egypt, both of which will be invited to purchase the electricity thus generated.

"US, EU want Egypt, Ethiopia to restart dam talks", 20/05/2014, online at: <http://www.turkishpress.com/news/407009/>

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❖ **Periscope: Cooperation Is Key for Disputes Resolution over Nile Waters**

The main key message of the valuable lecture of the reputable Sudanese water expert, Dr. Salman Mohd. Salman, in the workshop organized by Sudanese Media Centre (SMC), on the positive and negative impacts of Ethiopians dams on Sudan and in particular the Grand Ethiopian Renaissance Dam, was that resolving disputes and accelerating benefits and mitigating negative impacts to the minimum if not eliminating them completely from the river water projects like dams and water usage and distribution is mutual cooperation between all the Nile Basin countries.

The international expert was very frank and objective when he pointed quite clearly that clinging to the old agreements specially the 1959 agreement between Sudan and Egypt as the base for any discussions over water issues will only increase the disputes between the basin countries. This is because these countries have rejected this bilateral agreement which gave the two signatures a monopoly over any project on the basin.

In an exclusive interview with Al-Monitor On line newspaper last Novemebr-2013, Egyptian Foreign Minister Nabil Fahmy said: "Our goal is not to enter into a conflict, as much as it is to begin negotiations with the other two parties: Ethiopia and Sudan. Moreover, we must raise the issue of our reservations pertaining to details associated with the dam, such as its size, environmental effect, consequences upon water security and water management. We affirm that we seek, first and foremost, to initiate meaningful negotiations with Ethiopia and Sudan and that none of the parties' interests can be achieved in the absence of solutions that satisfy us all". This is still the official Egyptian position for negotiation with Ethiopia. But based on Dr. Salman lecture, the following remarks can be made.

Have Egypt conducted an environmental study before the erection of the Aswan High Dam and if so has it informed any one about it including Ethiopia and Sudan. In addition, Sudan has done the same in not consulting anyone when erecting new dams. So, this cannot be a one way road. Both countries have behaved as if they own the Nile alone and so cannot complain now that others are doing the same.

But accelerating the dispute will not be the solution and the present campaign by Egypt to close any venue for the funding of the Grand Ethiopian Renaissance Dam (GERD) will only increase Ethiopia

hard line against Egypt and Egypt should learn from its own history of what have happened when international donors have refused to fund the Aswan High Dam. Now the erection of GERD has become an issue of national pride for the Ethiopians who so far have financed from their internal resources \$1.7 billion out of the \$5 billion of the dam cost and the national feeling among millions of Ethiopian expatriates will fund the dam. But the continuation of this path will create and deepen enmity not only but the two countries but even the two peoples of the two countries. There is also an important point that should be stressed on that Sudan have not according to our knowledge given Egypt a mandate to defend its interests and Sudan leadership is quite capable of defending its country interests. So, Egyptian diplomat and politicians should speak only about their country interest and understand that Sudan is not an infant.

Further, on the issue of GERD, the Sudanese President has declared on 4 December, 2013 Sudan support to the dam. Off course, this decision was taken after the President has consulted with his ministers and advisers for a long time and found that it serve Sudan best interests.

In the end the best solution as Dr. Salman have stressed upon is to forget past homogeneities and negotiate within the framework Nile River Cooperative Agreement Framework Agreement and reach a just solution for all taking into consideration that for most of the river upstream countries the issue is of national pride because they were not and are not in actual need of the river water. They just want to be treated with respect and as equal and this should not be a hard job and Sudan have given the model in the GERD issue which should be followed by Egypt and ask Sudan to follow it.

“Periscope:Cooperation Is Key for Disputes Resolution over Nile Waters”, 21/05/2014, online at:
<http://news.sudanvisiondaily.com/article.html?rsnpaid=1613>

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❖ Cooperation is the Best Venue for Solution of Nile Water Issues, Expert

Khartoum - The best venue for the solution of the Nile Water issues is cooperation between first Sudan, Egypt and Ethiopia and latter with all River Nile Basin countries, said the Sudanese international water expert Dr. Salman Mohd. Salman in a workshop organized by the Sudan Media Centre (SMC) on the theme " Sudan and the Grand Ethiopian Renaissance Dam: Challenges and Opportunities".

He stressed that the framework for such cooperation should be on the bases of equal rights for all the basin countries on the international recognized rule of just and justifiable use. "The best framework on the table at present is the Nile River Cooperative Agreement Framework Agreement which was signed by six of the basin countries but ratified so far only by Ethiopia and when the other five ratify the agreement it will be enforceable according to the treaty clauses and international law," he added.

The fears of Sudan and Egypt on the loss of their historical share of water is unfounded because these countries are not in need of these waters but are against the control of the water usage by the downstream countries, Egypt and Sudan as reflected in the 1902, 1929 and 1959 agreements and which all these countries have refused to recognize.

Dr. Salman claimed that by all technical, economic and environment factors supports the erection of dams on the upstream of the Nile in Ethiopia and if this was done through cooperation among the three countries in the past, many problems in both downstream countries Sudan and Egypt could have been avoided. The other issue, he raised was a call for holding the official in the Ministry of Irrigation accountable for not utilizing 6.5 billion cubic meters of Sudan share in Nile Water since the 1959 Agreement with Egypt.

The expert pointed that one of the benefits for Sudan from the Ethiopian dam is the purchase of electricity at one-fifth of the local cost and this cooperation if expanded will be a great factor in the revival of the Sudanese economy.

In his interaction, the Egyptian Information Attaché in Sudan, Abdel Rahman Nasir affirmed that Egypt supports the economic development of all the River Nile Basin countries without harming the interest of any country and this cooperation goes beyond the river water to encompass many other development areas.

More details about this important workshop in our coming issues.

“Cooperation is the Best Venue for Solution of Nile Water Issues, Expert”, 19/05/2014, online at:
<http://news.sudanvisiondaily.com/details.html?rsnpid=235957>

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❖ When Water is a Weapon of Mass Destruction

Water is used as a weapon of war in ongoing conflicts, the UN has warned.

Secretary-general Ban Ki-moon expressed concern over reports that water supplies in the besieged Syrian city of Aleppo were deliberately cut off by armed groups for eight days, depriving at least 2.5 million people of access to safe water for drinking and sanitation.

Aleppo has had intermittent access to water from the beginning of May 2014, with a total cut in supply on 10 May.

"Preventing people's access to safe water is a denial of a fundamental human right," The UN chief warned. "Deliberate targeting of civilians and depriving them of essential supplies is a clear breach of international humanitarian and human rights law."

Using water as a weapon to weaken people is a tactic used not only in Syria, but also in the Middle East and Africa, including Iraq, Egypt, Israel and Botswana.

Maude Barlow, spokesperson of the [Council of Canadians](#) and [Food and Water Watch](#), told Inter Press Service (IPS) that during the Iran-Iraq war of the 1980s, the Mesopotamian Marshes were drained.

Former Iraqi president Saddam Hussein also drained them further during the 1990s.

The privatisation of water in Egypt was a major factor in the Arab Spring uprising, said Barlow.

She added that Botswana used water as a weapon against the Kalahari bushmen in an attempt to force them out of the desert in 2012.

In Gaza, a conflict lasting more than four decades has made it impossible to develop or maintain water infrastructure, causing the contamination of drinking water .

"Water as a weapon of war is a strong argument to governments and the UN that they must make real the human right to water and sanitation, regardless of other conflicts taking place," the spokeswoman added.

"When Water is a Weapon of Mass Destruction", 20/05/2014, online at: <http://www.ibtimes.co.uk/when-water-weapon-mass-destruction-1449346>

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❖ Integrated approaches to addressing thirsty energy

This year has been the driest in record¹ in California, USA and in the contiguous United States, January marked the driest month² since 2003 and the fifth driest since records began in 1880. The governor³ declared a state of emergency, hence Californians are concerned about having enough water to meet their needs – be it farmers, ranchers, municipalities, or energy companies.

Such variability in water supply and the quality of water resources is becoming increasingly recognized as a chief constraint for many businesses around the world, in particular energy companies. In 2013, CDP Global Water Report⁴ found that 82 percent of energy companies and 73 percent of power utility companies indicate that water is a substantive risk to business operations. In addition, 59 percent of energy companies and 67 percent of power utility companies have experienced water-related business impacts in the past five years. This report adds to the mounting evidence that energy and water resources must be planned in an integrated manner.

In order to help countries integrate water constraints into the energy sector and better address water and energy challenges, the World Bank has launched the Thirsty Energy initiative.⁵ Thirsty Energy works to prepare countries for an uncertain future by:

- Identifying synergies and quantifying tradeoffs between energy development plans and water use;
- Piloting cross-sectoral planning to ensure sustainability of energy and water investments; and
- Designing assessment tools and management frameworks to help governments coordinate decision-making.

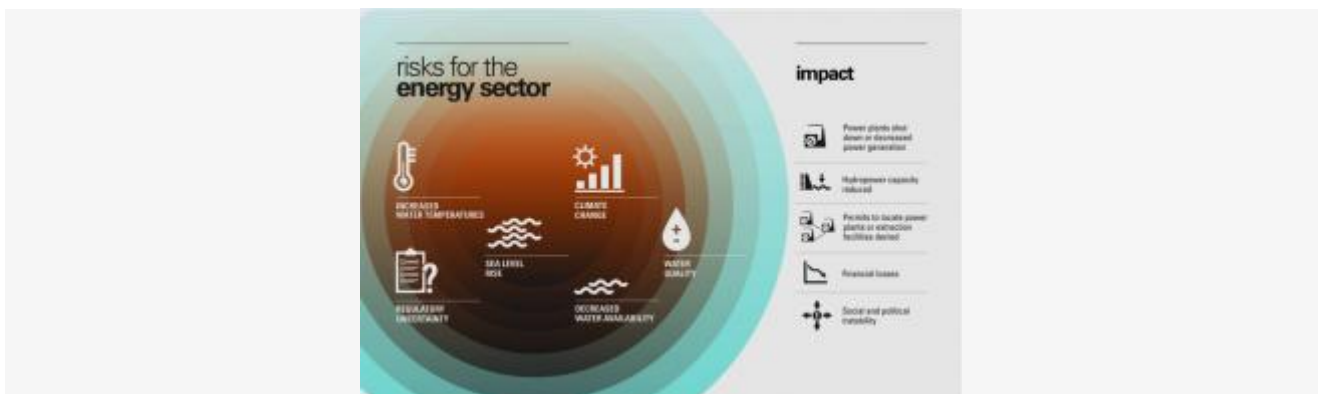


Figure 2. Energy sector risks. Source: World Bank (2014)

With the energy sector as an entry point, initial work has commenced in South Africa, where Thirsty Energy is working with its partners to integrate water as a constraining factor and water-related costs into the existing energy optimization model for South Africa (TIMES/MARKAL – SATIM). The Energy Research Center (ERC) at the University of Cape Town (UCT) has been developing and maintaining this model for many years, and it has informed energy, water and climate policies. UCT and the Bank will be partnering with the ERC to adjust their analytic tools to better incorporate water constraints. Specifically, Thirsty Energy seeks to include water in the model by taking into account the regional and temporal differences in demand and supply of energy and water resources, and include the price of water in the optimization.

In addition to work in South Africa, Thirsty Energy has also begun dialogues with partners in China, Morocco, and Brazil. Each country faces unique water and energy challenges, and therefore, it is expected that Thirsty Energy's work will produce findings that will be applicable in many different countries' climates and contexts.

Beyond modelling, Thirsty Energy seeks to engage diverse partners and to share knowledge and best practices. Operators may employ a range of technical approaches to reduce water use in power plants and exploit the benefits of possible synergies in water and energy, such as cooling systems requiring limited amounts of water; decreasing the waste heat of the plant and subsequently decreasing the cooling needs; or using alternative water sources, therefore displacing freshwater requirements.

For example, Power Plant Villa de Reyes in San Luis Potosi, Mexico has been using treated wastewater from the Tenorio wastewater treatment plant (WWTP) in its cooling towers instead of freshwater for the last six years. This integrated approach, in this case known as Project Tenorio⁶, is the first of its kind in Mexico. Nearly all of the WWTP's operational costs are covered from this revenue stream, and the power plant has a secure water source that is 33% cheaper than groundwater in the area. The power plant's use of reclaimed water has the additional environmental benefit of increasing aquifer sustainability, as it has reduced groundwater extractions by at least 48 million cubic metres over the lifetime of its operations.

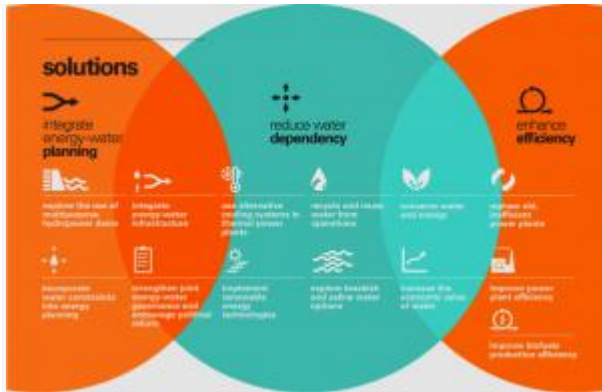


Figure 3. Solutions for water-dependent energy systems. Source: World Bank (2014)

Treated wastewater has been used to reduce the water requirements of power plants in several other countries as well, as water supply becomes more variable or disappears. Reclaimed water is becoming a more secure resource in certain contexts. According to the Argonne National Laboratory, around 50 power plants⁷ are using treated wastewater for cooling in order to adapt to water shortages. In Arizona, the Palo Verde nuclear power plant⁸ has been relying on treated wastewater since it began operating in 1986, as the climate is very arid and water allocation is limited. Such integrated approaches are critical to meet the growing energy and water challenges.

To ensure Thirsty Energy's findings are practical and viable, it has established a Private Sector Reference Group (PSRG) to share expertise and knowledge. Abengoa, Alstom, Veolia and EDF have already joined.

With its partners, Thirsty Energy seeks to develop modelling and management frameworks to increase operations' efficiency, reduce water use and impacts in water quality, embolden integrated planning, and enhance technology development and adoption. Technical solutions play a critical role in addressing water and energy challenges, as does institutional reform and guidance from policy is critical for sound planning and smart investments. Both will be made more robust if they are supported by projections derived from models, as that will ensure power plants are more strategically located and that technologies are implemented that increase energy efficiency.

Climate change and future growth will complicate any solutions, but it is critical that all stakeholders act now to explore tradeoffs and potential synergies in water and energy development, and develop

tools and approaches that will work to encourage sustainable development and security into the future.

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