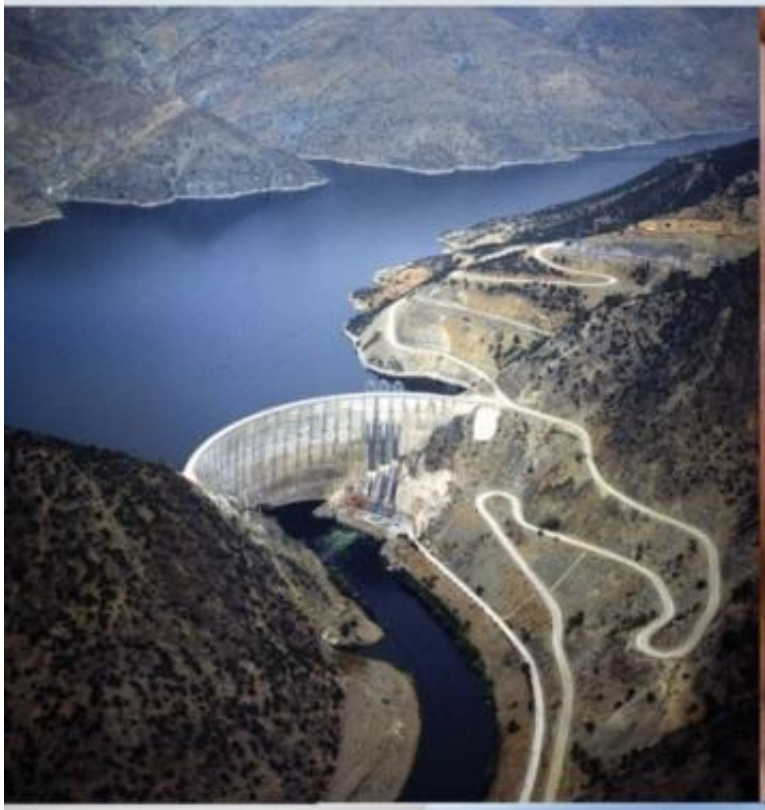


ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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





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Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
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❖ Water of life

Intense work is continuing. The March 7 deadline was missed by a bit, but what's a few months? Laying down the 80-km suspended pipeline is expected to be completed before July 20 so that the anniversary of the 1974 Turkish intervention that saved Turkish Cypriots from annihilation on the island will be provided with "water of life."

Natural gas resources off the island might help finance a resolution to the Cyprus problem if ever the two peoples of the island manage to strike a bitter power-sharing compromise. Irrespective of how much it is, the gas find in the Aphrodite field has already started posing added complications to the Cyprus problem, rather than helping a resolution. What will happen if more potential is discovered in nearby Area Nine? GreekCypriots will most probably become far less enthusiastic about sharing the prospective wealth with Turkish Cypriots. It is that gassy potential of the island, however, that energized the latest U.S.-pushed resolution initiative. So far, except for a seven-point joint statement, a leaders' summit and two meetings of the negotiators, contacts between the two sides have been limited. Negotiators from the two sides coming together at a table in Brussels for a workshop on the economic benefits of a resolution and exchanging jokes was a heartening development, but the process has apparently started inching toward a deadlock.

For example, could it be conducive with the "professed pro-settlement resolve" of GreekCypriots to offer Turkish Cypriots 18 percent of the land in the first substantive talks on outstanding issues? Yes, after years of persuasion by Greek Cypriot administrations to emigrate abroad, Turkish Cypriots might have constituted 18 or so percent of the island's population at one point in history. That might have been the case between 1963 and 1974. Now, many Turkish Cypriots have returned to the island and many new citizens were added to the population through marriages with mainland Turks, births, or emigrations to the island from Turkey. Besides, have Turkish Cypriots ever had only 18 percent of the land of the island? According to Turkish Cypriot statistics, Turkish Cypriots owned over 30 percent of the territory of Cyprus when the British left in 1960. Why? Because Turkish Cypriots were mostly farmers at the time.

Irrespective of whether today Turkish Cypriots constitute around 30 percent of the population of the

entire island with a population of around 265,000, while GreekCypriots have a population of around 690,000, where is the logic in offering Turks only 18 percent of the land? That, of course, was a provocation with which the Greek Cypriot side hoped Turks would walk out of the meeting. Gas and land are important issues, of course, but for a decent life on Cyprus, everyone is dependent on water.

Dams were constructed on the Anatolian shore, as well as near Kyrenia. A water distribution pipeline network is not yet complete, but in the beginning, water will flow from the old pipes. The suspended pipeline will start carrying water to Cyprus in July and within months, northern Cyprus will be connected to the Turkish electricity grid. Not only will the drinking water problem be solved, northern Cyprus will be provided with cheaper electricity and some water for irrigation.

Unlike Greek Cypriots who have been attempting to own the land alone, gas resources and all the other riches of the island, Turkish Cypriots have been offering Greek Cypriots the chance to jointly use water from Anatolia as water of life for peace on the island…
Does this attitude not deserve some applause?

"Water of life", 19/03/2014, online at: http://www.hurriyetdailynews.com/water-of-life.aspx?pageID=238&nID=63768&NewsCatID=425

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❖ Iran scrambles to save Lake Orumiyeh

The largest lake in the Middle East is drying up due to a lack of rain, dam construction and poor water management.

An environmental disaster is unfolding in northwest Iran.

Lake Orumiyeh, which was once the largest lake in the Middle East, is rapidly drying up.

Water mismanagement, a lack of rain and the building of a nearby dam are some of the causes.

The Government has developed 19 solutions to try to save Orumiyeh.

Al Jazeera's Soraya Lennie reports from Orumiyeh.

"Iran scrambles to save Lake Orumiyeh", 22/03/2014, online at:
http://www.aljazeera.com/video/middleeast/2014/03/iran-scrambles-save-lake-orumiyeh-20143220031409891.html

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❖ "Subsidence of One Million Hectares of Land" in Iran

One million hectares of natural areas and lands in Iran are plagued with subsidence due to the unregulated extraction of underground waters and the depletion of aquifers. Meanwhile, the rate of soil erosion poses a serious threat to the future of the country's environment and natural resources.

At a gathering on March 10 that was organized in collaboration with grassroots groups marking Natural Resources Week, the head of the Forest, Rangeland and Watershed Organization reported statistics about the current state of Iran's natural resources and areas which he deemed to be critical.

Khodakaram Jalali stressed that the net depletion of underground waters has caused subsidence in one million hectares of land in different parts of the country. He blamed the inadequate management of water resources and the drilling of wells, with and without permits, as the chief cause of this catastrophe. "When deep and semi-deep wells are drilled without any adequate criteria in order to promote unsustainable farming, aquifers become depleted, levels of underground water drop and then 230 fertile fields all across the country are thrown into critical situations," Jalali said.

The erosion of soil by water and wind, according to Jalali, is one of the chief challenges facing the country's natural resources. He placed water erosion at 16.7 tons per hectare and wind erosion at 50 tons per hectare, stressing that water erosion is fast washing away fertile soil all across the country, a problem that needs to be addressed without delay.

Watershed Flow Management

According to the head of the Forest, Rangeland and Watershed Organization, watershed flow management is the cure to all the natural resource problems facing the country. Jalali stressed that while the technology has long been known in Iran, it has not attracted much attention. He stressed that the importance of watershed flow management has been proven all across the globe, and many countries are dismantling their dams to manage watershed flow.

Jalali added that in all development projects, watershed flow must remain a chief consideration. "When the issue of an economy of resistance was discussed at the Expediency Council meeting to determine the priorities of the Infrastructure Commission in view of limited water resources in the country, it was decided that the most fundamental, effective and productive action is watershed management."

Overcapacity Grazing

The overuse of forests and fields by livestock was identified as another challenge facing the country's environment and natural resources, as Jalali reported that the amount of livestock in Iran is double what the country's natural resources can accommodate. He emphasized that grazing by livestock is preventing the growth of new trees. In the Zagros Mountain Range habitat, he indicated, there are only aging trees, while in a balanced and dynamic forest, there must be trees of different age ranges.

Disease, pests and fungi were also identified as a major cause of deforestation. One million hectares of forest in the Zagros region have been infected with pests, and 15 percent of the forest habitat has been completely dried out.

The over-exploitation of forests and natural resources has also caused climate change, shortages of drinking water, desertification, loss of wildlife and repeated droughts. Thus, the country is facing the immediate consequences of resource depletion, such as the drying out of Lake Oroumiyeh, the depletion of wetlands, the loss of grassland and severe air pollution.

Restructuring of Government Subsidies and Deforestation

An earlier report by Jalali indicated that another factor affecting forests and grasslands is the restructuring of government subsidies. The government phased out subsidies on energy and food staples, which led to a sudden rise in energy prices.

According to Jalali, this has led many people to turn to wood and dry bushes for heating purposes, which is causing an even greater loss of forest and grassland.

Jalali was quoted as saying: "In order to protect natural resources, we first have to address poverty and unemployment and give people the means to provide for their livelihood."

""Subsidence of One Million Hectares of Land" in Iran", 17/03/2014, online at: http://www.payvand.com/news/14/mar/1106.html

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❖ Column: The world's most water-stressed rivers

The World Resources Institue has released a ranking this week of the 18 river basins around the world facing the "extremely high" levels of water stress, meaning that "80 percent of the water naturally available to agricultural, domestic, and industrial users is withdrawn annually": http://bit.ly/1ijQ8tU

According to the list, Iran's Qom river faces the highest level of stress in the world.

Water supply has become a major environmental and political issue in Iran. The government has had to make contingency plans for rationing in Tehran, and riots have broken out over plans to divert a river from Esfahan province.

Five of the 18 basins on the list are in China. Indonesia, Afghanistan, India and the United States each have two.

The Colorado River and the Bravo Basin of the Rio Grande are America's most stressed basins. As Andrew Maddocks and Paul Reig of RWI point out, more than 30 million people depend on the Colorado for water and the seven states it supplies comprise 19 percent of America's GDP.

Last year authorities had to make major cuts to the amount of water flowing downstream for the first time in the heavily managed river due to record-low water levels in the reservoirs of Lakes Mead and Powell.

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Full list on WRI site: http://bit.ly/1ijQ8tU

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Joshua Keating is a staff writer at Slate focusing on international news, social science and related topics. He was previously an editor at Foreign Policy magazine.

"Column: The world's most water-stressed rivers", 21/03/2014, online at: http://www.nhregister.com/environment-and-nature/20140321/column-the-worlds-most-water-stressed-rivers

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❖ Water As A Challenge, And Answer, In Mideast Peace Talks

Water is the common denominator of the human experience. Our home is called the Blue Planet because of the spacious amounts of water covering the earth. Adding to our shared experience, water makes up about 60 percent of our body mass, and water plays a significant role in the world's religions. The three Abrahamic religions, born out of the waterless deserts of the Middle East, all use water in significant ways. Yet, freshwater, literally our source of life, makes up only 2.5 percent of all of the earth's water, and so we are not surprised when we look at the Arab-Israeli conflict, and discover that water factors as a source of confrontation.

Water, particularly the headwaters of the Jordan River, has led to tensions in the region for the past six decades. Water was one of the major causes of the 1967 Six Day War, and has been an ongoing unresolved issue between the Palestinian and Israeli authorities. At the same time Israel and Jordan created water sharing modalities in their peace treaty of 1994 and there are models of water cooperation between various NGOs in the region. Secretary of State John Kerry has found the question of the Jordan River Valley a core issue in the talks between the Israelis and Palestinians.

Dr. Clive Lipchin is director of Center for Transboundary Water Management at the Arava Institute for Environmental Studies. In an address at Bennington College's Center for the Advancement of Public Action Water Dialogues, he shared a plan to use desalinization as a game-changer for regional water management and cooperation in the Middle East, particularly the Jordan River. As he stated, the growing populations of Israel, the Palestinian Authority, and Jordan outpacing, in Malthusian dimensions, the availability of fresh water adds yearly to the regional stresses. A country is considered water poor if it has an annual capacity of less than 1000 cubic meters and in state of chronic water shortage with an annual capacity of less than 500 cubic meters of water a year. To put the challenges of the region in perspective Israel has an annual capacity of only 300 cubic meters a year, Jordan 230 cubic meters a year, and the Palestinian Authority 95 cubic meters a year.

In 2010 the water demand for the Palestinian Authority, Jordan, and Israel was just under 4000 cubic meters a year with a supply of just over 3000 cubic meters a year. By 2040 the demand will increase to just over 7,000 cubic meters a year with the supply lagging even further behind at 5,000 cubic meters a year.

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The Sea of Galilee and the Dead Sea both provide stark visual images of state of water in the region. Since 2004 the level of the Sea of Galilee has dropped from -208.80 meters below sea levels to -213.60 meters below sea level, while the Dead Sea is now disappearing at the rate of 1.3 meters a year. In 1960 the level of the Dead Sea was at – 390 meters below sea level with a surface area of 1020 square kilometers, in 2005 the level was – 420 meters below sea level and has a surface capacity of only 635 square kilometers.

The shrinking amount of fresh water available as needs for fresh water continue to grow combined with the political tensions in the Jordan River watershed only make a bad situation worse. When it comes to our encounter and use of the earth's environmental resources limiting choices to political borders can stifle the imagination of what is possible. Nature simply does not know borders. The Canadian organization Program on Water Governance advocates a regional approach to water issues that takes into account watersheds. They say that water security may be defined as, "sustainable access, on a *watershed* basis, to adequate quantities of water, of acceptable quality, to ensure human and ecosystem health."

Echoing this approach Dr. Lipchin says that national capacities and need should be identified within a regional context and when this is done with the countries of the Jordan River watershed possibilities reveal themselves. (With present political realities Syria and Lebanon are not included for the time being.) Israel has some of the world's largest desalinization plants on her Mediterranean shoreline that can provide the growing freshwater needs of Israel and her neighbors. Jordan has large amounts of land where the vast amounts of electricity needed to power the desalination plants could be generated. And the Palestinian territories contain very important groundwater aquifers essential to the health of the Jordan River watershed.

We are in the home stretch of the nine-month peace talks between the Israelis and Palestinians sponsored by the Obama Administration. Borders, security, refugees, and Jerusalem are being addressed. While all are important and essential for an agreement, they lack modalities for cooperation. An agreement that only focuses on separating the parties without also bringing them together is bound to fail. The Jordan River watershed that transcends whatever borders may be agreed to provide a shared link from which the peoples of the region can build new relationships and work together on common interests.

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Rabbi Michel M. Cohen is the rabbi emeritus of the Israel Congregation in Manchester Center, Vermont and teaches about conflict resolution at Bennington College. He is director of community relations for Friends of the Arava Institute for Environmental Studies.

"Water As A Challenge, And Answer, In Mideast Peace Talks", 19/03/2014, online at: http://www.thejewishweek.com/editorial-opinion/opinion/water-challenge-and-answer-mideast-peace-talks

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❖ Kurdistan Kayak Expedition to Raise Awareness About Threats to Rivers

SULAIMANI, Kurdistan Region – "There is a saying: Drink from the river, catch fish from the river and swim in the river," says Nabil Musa, recalling the river of his childhood, "But we have lost that river now."

The rush to develop has put rivers in Iraq,and the Kurdistan Region in particular, at grave risk. To raise awareness of the threats and to encourage the sustainable use and protection of the region's rivers, local and international non-governmental organizations (NGOs) are coming together this May for the Rawanduz River Kayak Expedition.

The expedition team will launch their kayaks in the waters of the Rawanduz River near Choman, in the northeast corner of the Kurdistan Region of Iraq. Fifteen days later, after navigating the complete length of the river, their journey will come to an end near Rawanduz.

Along the way, the team of professional kayakers, river advocates and videographer will conduct outreach to local communities, to raise awareness about the threats that rivers face.

Musa is the head of Waterkeepers Iraq, a program working to protect Iraq's rivers, streams and waterways through effective water resource planning, water quality protection and advocacy, as well as through education and outreach on the sustainable use of natural resources.

There are about 200 Waterkeepers worldwide, but Musa is the first in Kurdistan, Iraq and the greater Middle East.

"As a Waterkeeper, I am a voice for the rivers," Musa says.

The Rawanduz River flows into the Greater Zab -- the last wild river in all of Iraq -- and a major tributary of the Tigris River. At least seven major dams are planned on the Rawanduz, and over 15 dams are currently being considered for the Greater Zab River Basin.

Anna Bachman of Nature Iraq, a local environmental NGO, says a dam's impact depends on its size, and that there are always winners and losers.

"Sometimes, the losers are downstream, as a result of reduced flows, chaotic and sometimes catastrophic releases, increased erosion and sometimes -- particularly for irrigation dams -- more

polluted water coming out of the dam. Sometimes the losers are upstream -- people displaced and quality farmland submerged by a dam-created reservoir."

Sedimentation can also be a significant issue. When the reservoir behind the dam becomes choked with sediment, the dam loses its ability to store water.

Bachman notes that all dams have a limited lifespan and that any sizable dam will result in a loss of biological diversity in the river

"Since we are still discovering new species unknown to science in the rivers of Kurdistan, building dams will mean losing fish and other species that might only be found in Kurdistan. This has ripple effects all the way up and down the river," Bachman explains. "Once a dam is built, it is not easy to go back and restore the river afterwards."

Current laws in the Kurdistan Regional Government (KRG) require that all major construction projects have an environmental impact assessment (EIA) carried out before being started, to understand the possible impacts that a project may have on the environment.

But none of the dams currently under construction or being planned in the Kurdistan Region has ever had an EIA carried out.

For Musa, dams are not the way forward. "Let the waters keep flowing," he stresses.

One of the main goals of the expedition is to highlight the eco-tourism potential of Kurdistan's wilderness areas and demonstrate that there is great value in keeping rivers wild, free and clean.

To enrich Iraqi river advocacy efforts and education campaigns, the expedition will be documented in a short film that will showcase the eco-tourism potential of Kurdistan's wild and scenic environs to local and international audiences.

The expedition has been made possible by the joint efforts of Nature Iraq, the US-based Nature Iraq Foundation charity that provides support to Nature Iraq, the American Canoe Association and Majestic Heights Outdoor Adventures, an eco-tourism company based in the Kurdistan Region.

The awareness campaign comes on the heels of last year's successful Tigris River Flotilla.

Last September, a voyage of traditional Mesopotamian boats set off from Hasankeyf, Turkey, and spent a month floating down the Tigris River until reaching the Mesopotamian Marshes of southern Iraq.

The flotilla celebrated the cultural heritage of Mesopotamia, educated riverside communities on the importance of the Tigris River and environmental awareness, and studied the river's current hydrological state.

The Rawanduz River Expedition is using the crowd-funding website Indiegogo to raise the $10,000 needed to support the costs of filmmaking.

Nature Iraq notes that the total cost of the expedition will be around $70,000. Much of the funding is coming from within Iraq, as well as from expedition participants themselves.

"Kurdistan Kayak Expedition to Raise Awareness About Threats to Rivers", 18/03/2014, online at: http://rudaw.net/english/kurdistan/180320143

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❖ EU, UNICEF launch 10m. euro Gaza desalination project

The European Union and UNICEF laid the cornerstone on Friday for the construction of a €10 million desalination plant in Gaza.

The plant, to be implemented by UNICEF with funding from the EU, would provide 6,000 cu.m. of drinking water per day to approximately 75,000 Palestinians in Khan Yunis and Rafah in southern Gaza, according to the two organizations.

Installation of the plant will be adjacent to the sea, near Deir al-Balah, and is expected to begin operating in 2015.

"Access to clean water is a fundamental human right for all," said EU representative John Gatt-Rutter at the ceremony.

"And yet many Gazans face acute water shortages on a day-to-day basis. Others can only access water of very poor quality."

Construction of a desalination plant, the option chosen by the Palestinian Water Authority in 2011, will help curb over-extraction from the groundwater and the Gazan aquifer's total collapse, according to information from the EU and UNICEF.

Such over-extraction could render the aquifer entirely unusable by 2016, according to a United Nations report.

Due to the unusable nature of the region's groundwater, four out of five Gazans buy unregulated water from expensive, private sources, some spending as much as a third of their income on water, information from the EU and UNICEF showed.

As per the 1994 Oslo Accords, Israel is required to provide at least 23.6 million cu.m. per year of water to the Palestinian Authority, of which five m.cu.m. is supposed to go to Gaza. Currently, Israel supplies 52 m.cu.m. to the PA, Water Authority data showed.

"The launch of construction work on this desalination plant offers the prospect of access to clean water for many thousands of families in Khan Yunis and Rafah," Gatt-Rutter said. "It forms part of the EU's wider commitment to improving the lives of Palestinians both in Gaza and West Bank in particular in the area of water, sanitation and solid waste management."

"EU, UNICEF launch 10m. euro Gaza desalination project", 22/03/2014, online at: http://www.jpost.com/Enviro-Tech/EU-UNICEF-launch-10m-euro-Gaza-desalination-project-346164

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❖ Water apartheid in Palestine - a crime against humanity?

Systematic, acute, malicious discrimination in access to water in the West Bank and Gaza, combined with massive resource theft, is operated by the occupation authorities and the private water company Mekorot, writes Ayman Rabi on UN World Water Day.

Today is UN World Water Day - a day to remember the billion people who are unable to meet their needs for safe, clean water due to drought, poverty and official neglect.

But it's also a day to remember, and fight for, 2.1 million Palestinians who suffer something different - an artificial water scarcity deliberately created and sustained by Israel's military occupation, and the private Israeli water company Mekorot.

Increased international pressure brings hope that the tide may be finally turning for Palestinians striving for water justice in the West Bank and Gaza - in particular, recent investment and partnership decisons against Mekarot, which runs Israel's discriminatory water policy in the West Bank.

Waterless in Gaza and East Jerusalem

The situation in Gaza is especially dire. The tiny, densely populated territory relies entirely on its depleted, saltwater-contaminated and sewage-polluted aquifer, and the water it produces is unfit for consumption. Water has to be bought, expensively, in bottles or from mobile tanks.

Moreover restrictions on fuel imports mean that Gaza's single power station spends most of its time idle - and so long as it's not running water and sewage cannot be pumped. So the taps are dry, toilets are blocked, and sewage pollution gets worse.

Not that Palestinian residents of East Jerusalem have it a lot better. As reported on 17th March, the city suffered a long water cut beginning on 4th March leaving Ras Shehada, Ras Khamis, Dahyat A'salam and the Shuafat refugee camp - cut off from the rest of the city by the separation wall - with no running water.

The reason is simple - old and inadequate water infrastructure, which there are no plans to improve or renew.

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Oslo II Accords - the Palestinians were shafted

For West Bank as a whole the facts speak for themselves. The Oslo II Accords dealt Palestinians a singularly poor hand - limiting the volume of water it could produce, as well as imposing severe restrictions on the development and maintenance of Palestinian water infrastructure.

The Accords allow Palestinans to abstract only 118 million cubic meters (mcm) per year from boreholes, wells, springs and precipitation in the West Bank. But Israel is allowed to take four times as much - 483 mcm per year - from the same Palestinian resources.

So not only does Israel now occupy 80% of the area of historic Palestine, but it - via the water company Mekarot - also takes 80% of the water resources from the 20% of the land that is left to the Palestinians.

Sold down the river

But it gets worse. Oslo II's draconian restrictions on water development imposed by Israel mean that Palestinians can only actually abstract 87 mcm in the West Bank, of the 118 mcm they are allowed.

The acute water deficit is made up by the supply of piped water from Israel. Mekarot currently sells the Palestinian Water Authority some 60 mcm per year - at full price.

As reported by Amira Hass in Ha'aretz, "in that agreement Israel imposed a scandalously uneven, humiliating and infuriating division of the water resources".

While Palestinian water is piped into Israel at no cost, a fraction of it is then piped back again, and paid for. In this way Israel is extracting from Palestinians both their water, and their money.

In some cases Palestinians are forced to pay ten times more for their water than the price in Tel Aviv - as in the village of Sussia on South Mount Hebron, where they have to drive to the nearby town to buy over-priced water (see photo).

Water plenty, and water famine

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According to the UN Human Rights Council, this all translates into a wide disparity between water use by Palestinians and by settlers in the West Bank. Settlers enjoy 400 litres per capita per day (l/c/d) while some Palestinians surive on a little as 10 l/c/d.

All Palestinian populations receive water volumes far below the level recommended by the World Health Organization of 100 - 250 l/c/d. According to the UNHRC:

"Settlements benefit from enough water to run farms and orchards, and for swimming pools and spas, while Palestinians often struggle to access the minimum water requirements.

"Some settlements consume around 400 l/c/d, whereas Palestinian consumption is 73 l/c/d, and as little as 10-20 l/c/d for Bedouin communities which depend on expensive and low quality tanker water."

These very low levels of water provision fail to meet the water needs of many Palestinian communities - leaving them with often contaminated water, and not enough of it.

While Palestinian water use may just exceed 70 l/c/d in the relatively well served urban centers of the West Bank, it drops much lower in rural areas that have no access to piped water and depend on wells and rainwater collection.

An estimated 113,000 Palestinians in the West Bank have no piped water supply, while hundreds of thousands more have only intermittent supply, especially in the summer.

Additional restrictions

The restrictions and limitations imposed on Palestinians to access their own resources and develop them have exacerbated the already severe water shortages among Palestinian communities.

Among the restrictions are limits on the size of supply pipe, intended to limit flows as a form of rationing. Typically 30% of the water leaks from Palestinian supply pipes - because Israel refuses to allow their renewal

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In 'Area C', which covers 60% of the area of the West Bank, Palestinian farmers and communities are not allowed to connect to the water network that serves the growing settlements - and are forbidden even to dig out cisterns.

The international community considers the establishment of Israeli settlements in the Israeli-occupied territories illegal under international law, as set out in the report of the fact finding mission of the United Nations Office of the High Commissioner for Human Rights.

Yet the construction of new illegal Israeli settlements and 'outposts', and the expansion of existing ones, is proceeding apace - and further reducing the quantity of water allocated to Palestinians.

Your water or your life

As reported by the UN in March 2012, another threat arises from settlers seizing springs by force: "Palestinians have increasingly lost access to water sources in the West Bank as a result of the takeover of springs by Israeli settlers, who have used threats, intimidation and fences to ensure control of water points close to the settlements."

The UN Office for the Coordination of Humanitarian Affairs (OCHA) examined 60 springs on Palestinian land close to Israeli settlements. They found that:

"In 22 of the water sources, Palestinians have been deterred from accessing the springs by acts of intimidation, threats and violence perpetrated by Israeli settlers, while in the eight springs under full settler control, Palestinian access has been prevented by physical obstacles, including the fencing of the spring area, and its 'de facto annexation' to the settlement."

Violence and destruction may also come directly from the occupation authorities. "Destruction of water infrastructure, including rainwater cisterns, by Israeli authorities has increased since the beginning of 2010; double in 2012 compared to 2011.

"The denial of water is used to trigger displacement, particularly in areas slated for settlement expansion, especially since these communities are mostly farmers and herders who depend on water for their livelihoods.

"A number of testimonies highlighted that the cutting off from water resources often precedes dispossession of lands for new settlement projects."

Mekorot - at the heart of Israel's water apartheid

All Israeli settlements in the West Bank are connected to piped water supplied by Israeli water company Mekorot, which took over responsibility for the water resources of the West Bank from the occupying forces in 1982.

Thus it Mekarot which is both the on-the-ground enforcer, and the economic beneficiary, of the West Bank's 'water apartheid'.

As the UN Human Rights Council reports: "In the Jordan Valley, deep water drillings by the Israeli national water company Mekorot and the agro-industrial company Mehadrin have caused Palestinian wells and springs to dry up. Eighty per cent of the total water resources drilled in the area is consumed by Israel and the settlements."

"The lack of availability of Palestinian water resources has led to chronic shortages among Palestinian communities in Area C and a dependence on Mekorot ... Mekorot supplies almost half the water consumed by Palestinian communities.

Restricted access

The UNHRC also reported that Palestinians do not have access to the cheaper 'recycled water' available to Israeli settlements, and have to buy more expensive drinking water even for irrigation purposes.

This injustice and inequity of access to water supply has always been a source of tension, especially when Palestinian villagers see water pipes leading to Israeli colonies passing through their land without supplying their village with water - as reported above at Sussia.

"The Mission heard of situations where villagers must travel several kilometres to get water when closer water resources serve neighbouring settlements", reported UNHRC.

And even when they do get water, they receive second class treatment. "In the event of a water shortage, valves supplying Palestinian communities are turned off; this does not happen for settlements.

'Week of Action Against Mekorot'

Mekorot violates international law and colludes in resource grabbing -including pillaging water resources in Palestine. It supplies this pillaged water to illegal Israeli settlements, and engages in systematic discrimination and denial of water to the Palestinian population.

For this reason Palestinian organizations including PENGON / Friends of the Earth Palestine have co-organised a 'Stop Mekorot' week of action starting today, on World Water Day.

The campaign aims to intensify pressure on governments and companies to boycott Mekorot and hold the company accountable for its discriminatory water policies and practices in Palestine.

On March 20, the environmental federation Friends of the Earth International announced its support for the campaign against the discriminatory practices of Mekorot - joining the global call on governments, public and private utility companies and investors worldwide to avoid or terminate all contracts and cooperation agreements with Mekorot.

Campaign successes

In December 2013 the largest drinking water supplier in the Netherlands, Vitens, set a precedent when it decided that its commitment to international law meant it had to withdraw from a cooperation agreement with Mekorot. According to the company:

"Vitens attaches great importance to integrity and adhering to international laws and regulations. Following consultation with stakeholders, the company came to the realization that it is extremely difficult to continue joint work on projects, as they cannot be separated from the political environment."

Mekorot suffered another blow this week when authorities in Buenos Aires, Argentina, suspended a proposed $170m water treatment plant deal.

The decision followed a campaign by local trade unions and human rights groups which highlighted Mekorot's role in Israel's theft of Palestinian water resources - and raised the prospect that Mekorot might export its discriminatory water policies to Argentina.

Palestinians must have their rightful share of available resources and be granted full authority to manage them properly. Equitable and wise use of available resources among all people is the only basis for lasting peace in the region.

And until then the deliberate, systematic, purposeful water discrimination and resource theft carried out in Occupied Palestine by the Occupation and Mekorot must be recognised for what they are - crimes against humanity. The perpetrators must be punished accordingly.

"Water apartheid in Palestine - a crime against humanity?", 22/03/2014, online at: http://www.theecologist.org/News/news_analysis/2329259/water_apartheid_in_palestine_a_crime_against_humanity.html

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❖ Debunking some myths about Israel's water politics

In his speech to Israel's Parliament on February 12, Martin Schultz, president of the European Parliament, spoke of our shared responsibility to stand up for freedom and dignity at all times. He acknowledged Israel's success at realising a dream shared by many people: To live "in freedom and dignity" in "a homeland of their own", noting that Palestinians also have the right to "self-determination and justice".

He then addressed Palestinian suffering and in doing so, highlighted the glaring discrepancy in access to water between the Palestinians in the West Bank and Gaza on the one hand, and Israelis - inside the "Green Line" and on settlements in the West Bank - on the other.

AIPAC did not remain silent. In a New York Times article AIPAC's Seth Siegel suggests that the Arabs should stop viewing Israel as "the problem". Without any mention of Israel's occupation of Palestinian land, he calls upon Arabs to reach out to Israel and benefit from its superior know-how.

Israel could save them from water scarcity and reconciliation could ensue. Prime Minister Benjamin Netanyahu spoke likewise in his address to AIPAC on March 4: The Arabs need to recognise Israel as a Jewish state; then there would be peace and the deserts would bloom.

The core issues

On the eve of the Oslo Accords, I wrote a book on the potential for cooperation in water use among adversarial states in dry climate zones. I argued that "functional cooperation" in protracted conflict settings was exceedingly difficult to achieve. If, however, negotiated arrangements were reached, they would be piecemeal and narrowly-focused - arrived at because there was no viable alternative.

Such arrangement, nonetheless, should not be construed as reflecting cooperation, and they would not spill over into peace. I referred to this strategy as conflict-resolution by "nibbling at the edges", and insisted that it reflected the preferences of the more powerful protagonist and its refusal to address the core issue of conflict.

If Israel genuinely wants peace with its neighbours, it will end its occupation of Palestinian land and control over the people, their resources, and livelihood. That is the crucial first step.

By failing to acknowledge the occupation, would-be conflict-solvers ignore what almost 50 years of Israel's domination and control over Palestinian land has meant for Palestinian water resources and access to water.

Since Israel's occupation of the West Bank and Gaza in 1967, Palestinians have consumed only as much water as the Israeli government allows them.

Not surprisingly, the per capita consumption of a Palestinian household is about one-third that of an Israeli household. Moreover, Palestinians cannot dig wells for water on their land without permission from the Israel Water Authority, and in some parts of the West Bank (above the "Mountain" aquifer), drilling wells is strictly forbidden; further, they can pump from wells only as much water as the Authority allows.

A graphic representation of the unfair restrictions is that while many Jewish settlements have swimming pools, Palestinians in "Area C" of the West Bank are not allowed cisterns for collecting rainwater.

While it has been said that West Bank Palestinians receive much of their water from Israel's national water utility, this is misleading for Israel does not give Palestinians water; it sells them water. To be more exact, Palestinians are forced to purchase water from Israel to satisfy demand; and some of the water they purchase comes from their own aquifers.

This is the case because the Oslo II Accords (1995) - which, according to some, were supposed to lead to peace - gave Israel control over the water resources of the West Bank, stipulating that Palestinians will receive only 20 percent, while Israelis, inside the "Green Line" and on West Bank settlements, make off with 80 percent. As the iniquitous distribution of water reveals, Oslo became the continuation of control by other means.

As for Gaza, Israeli government advocates claim that under a Hamas government, its water supply has become polluted. The water situation in Gaza is dire, but not because of Hamas. Rather, at Israel's

insistence, Oslo II stipulated that Gaza should be sovereign in water use and rely for its supply solely on the aquifer underlying its territory.

End the occupation

However, population growth and development have made local water needs greater than the local aquifer can provide. With no other source, Palestinians have been over-pumping from the single aquifer, causing the intrusion of seawater and sewage, rendering the water supply unusable. If Gaza's residents were allowed to access other sources, they would not be over-pumping.

Having said this, the condition of water scarcity is indeed real and requires careful attention, including the adoption of water-saving technologies and practices.

For the Palestinian territories, however, resource constraints that derive from nature have been intensified by Israel's punitive policies and unfair distributive practices as the occupying power.

Having imposed debilitating conditions on the Palestinian people, Israel now offers its services as the saviour of the Palestinians - if only they would cooperate! There is a profoundly disingenuous logic to this approach.

If Israel genuinely wants peace with its neighbours, it will end its occupation of Palestinian land and control over the people, their resources, and livelihood. That is the crucial first step.

Miriam R Lowi is Professor of Comparative & Middle East Politics, The College of New Jersey and author of Water and Power: the Politics of a Scarce Resource in the Jordan River Basin *(Cambridge University Press)*

"Debunking some myths about Israel's water politics", 19/03/2014, online at: http://axisoflogic.com/artman/publish/Article_66482.shtml

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❖ Statistics Bureau: More than a Quarter of Water Purchased from the Israeli Water Company "Mokrot"

RAMALLAH, March 20, 2014 (WAFA) - More than a quarter of water supplied to domestic consumers was purchased from the Israeli water company, said a report on Thursday by the Palestinian Central Bureau of Statistics (PCBS).

On the occasion of World Water Day, March 22, PCBS and PWA presented key indicators related to water and energy in Palestine.

Data for 2013 revealed that 48.8% of households in Palestine considered the quality of water to be good: 73.5% in the West Bank compared to 5.8% in the Gaza Strip.

In 2013 27% of households in Palestine had water supplied on a daily basis, while 51.3% of households were supplied with water three to four days per week, said the report.

Israel is the main source of electricity in Palestine: 4,702 GWh were purchased from Israel in 2012 constituting 88.7% of the total energy purchased in Palestine of 5,301 GWh in 2012.

Around 7.4% of energy was purchased from the Palestinian company in the Gaza Strip, 2.3% of energy was imported from Egypt and 1.6% of all energy was imported from Jordan.

Palestine imports its oil fuels entirely from Israel and that the reason why Palestine has extremely high prices of fuel and energy.

The report said about two thirds of Palestinian households rely on solar water heating.

The results of the domestic energy survey (July 2013) showed that 62% of households in Palestine use solar water heating and thus save more than 600 GWh, which is estimated to be the equivalent of 100 million dollars yearly according to the Palestinian Energy Authority, placing Palestine at the top of the countries that use this renewable source of energy.

Water losses totaling 77.3 MCM in 2012 are the main problem faced by the water sector and greater efforts are required from the Palestinian government to repair the leakage of water from the water network and reduce the quantity of water losses.

It said that Palestinian governorate should look for alternative sources of water to reduce the burden on existing domestic water sources. These might comprise the use of treated water for irrigation (111.5 MCM for agricultural use) or for cooling processes as required by power plants.

However, water treatment plants consume large amounts of energy and as most energy in Palestine is imported from Israel at a high price, this may only serve to exacerbate the problem, it added.

Palestinian governorate needs to rely on renewable energy sources such as wind and solar energy that do not require water.

For example, a desalination plant in the Gaza Strip that produces 38 MCM of fresh water would need 35 MWh. This would be lower than the 85 MWh energy required in the Gaza Strip by 2018, in addition to implement the strategic treated plant that will produce 55 MCM of fresh water, concluded the report.

"Statistics Bureau: More than a Quarter of Water Purchased from the Israeli Water Company "Mokrot"", 20/03/2014, online at: http://english.wafa.ps/index.php?action=detail&id=24649

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❖ World Water Day: 25% of Water Supplied to Domestic Consumers was Purchased from the Israeli Company

On the occasion of World Water Day, the Palestinian Central Bureau of Statistics (PCBS) and the Palestinian Water Authority (PWA) issued a joint press release on the occasion of World Water Day presenting key indicators related to water and energy in Palestine.

Water and energy are vitally important factors in all societies and United Nations declared "Water and Energy" as the theme for World Water Day 2014.

More than a quarter of water supplied to domestic consumers was purchased from the Israeli water company

Development in Palestinian society has led to increased demand for water and it is crucial to achieve the goals of sustainable development. Limited water resources impact on the quantity of water available, which was 349.2 million cubic meters (MCM) in 2012. Of these, 56.6 MCM were purchased from the Israeli water company "Mokrot", constituting 28% of the water supplied to domestic consumers, in addition to iniquitous pumping from the coastal aquifer in Gaza Strip that reach to 130 MCM.

The increase in population combined with a static quantity of water defined in the Oslo Agreement has had a significant impact on the daily allocation per capita: 76.4 l/c/d in the West Bank and 89.5 l/c/d in the Gaza Strip. However, 95% of drinking water in the Gaza Strip does not meet WHO standards and is also less than the minimum quantities recommended by WHO.

The amount of water obtained from ground water aquifers is estimated to be only 15%, while 85% is drawn by Israel.

however the Palestinian also deprived from their rights in Jordan River since 1967.

About half of households consider water quality to be good

Data for 2013 revealed that 48.8% of households in Palestine considered the quality of water to be good: 73.5% in the West Bank compared to 5.8% in the Gaza Strip.

The low percentage in the Gaza Strip is due to increased salinity in the water because of the seepage of wastewater into the groundwater and the absence of supervision of drinking water by districts in the Gaza Strip.

Quarter of Palestinian households have regular water supply daily

In 2013 27% of households in Palestine had water supplied on a daily basis, while 51.3% of households were supplied with water three to four days per week.

Most energy consumed is imported from Israel

Israel is the main source of electricity in Palestine: 4,702 GWh were purchased from Israel in 2012 constituting 88.7% of the total energy purchased in Palestine of 5,301 GWh in 2012.

Around 7.4% of energy was purchased from the Palestinian company in the Gaza Strip, 2.3% of energy was imported from Egypt and 1.6% of all energy was imported from Jordan.

Palestine imports its oil fuels entirely from Israel and that the reason why Palestine has extremely high prices of fuel and energy.

About two thirds of Palestinian households rely on solar water heating

The results of the domestic energy survey (July 2013) showed that 62% of households in Palestine use solar water heating and thus save more than 600 GWh, which is estimated to be the equivalent of 100 million dollars yearly according to the Palestinian Energy Authority, placing Palestine at the top of the countries that use this renewable source of energy.

There has been a noticeable decrease in the percentage of households that use solar heating in Palestine from 72% in 2001 to 62% in 2013; around 32% of households rely on electricity as the main source to heat water according to energy data for 2013.

Prospects for development of water and energy

Water losses totaling 77.3 MCM in 2012 are the main problem faced by the water sector and greater efforts are required from the Palestinian government to repair the leakage of water from the water network and reduce the quantity of water losses.

Palestinian governorate should look for alternative sources of water to reduce the burden on existing domestic water sources. These might comprise the use of treated water for irrigation (111.5 MCM for agricultural use) or for cooling processes as required by power plants.

However, water treatment plants consume large amounts of energy and as most energy in Palestine is imported from Israel at a high price, this may only serve to exacerbate the problem.

Palestinian governorate needs to rely on renewable energy sources such as wind and solar energy that do not require water. For example, a desalination plant in the Gaza Strip that produces 38 MCM of fresh water would need 35 MWh. This would be lower than the 85 MWh energy required in the Gaza Strip by 2018, in addition to implement the strategic treated plant that will produce 55 MCM of fresh water.

"World Water Day: 25% of Water Supplied to Domestic Consumers was Purchased from the Israeli Company", 20/03/2014, online at: http://english.pnn.ps/index.php/national/7155-on-the-occasion-of-world-water-day-25-of-water-supplied-to-domestic-consumers-was-purchased-from-the-israeli-company

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❖ **Italian activists have gathered in Rome to demonstrate against what they call Israel's stealing water from Palestinians.**

Some Palestinian nationals also attended the event on Saturday, which marked the World Water Day.

The activists say Israel continues to steal water reserves from Palestinian lands in order to attract more migrants and expand agricultural fields.

They called on the Italian government to scrap an accord that Rome's water company ACEA signed last December with the Israeli water company Mekorot.

Last month, a group of Italian activists launched an online petition to raise awareness against the accord.

The petition launched by the Italian movements for public water, pro-Palestine groups and associations promoting peace and inter-religious dialog, complains that Israel's water apartheid runs counter to international law.

The petitioners argued in a message sent to Rome's mayor that Mekorot is nurturing water apartheid in the occupied Palestinian territories, thus breaching international law and human rights.

Amnesty International says Mekorot sells water at highly subsidized prices to Israeli settlers in the illegal settlements across the occupied West Bank, while about 40 percent of the water supplied to Palestinians in the same area is distributed at much higher, unsubsidized prices.

Israel has been under fire for its policies against Palestinians.

The Boycott, Divestment and Sanctions (BDS) movement against the Israeli regime is swiftly gaining momentum all across the globe.

The movement aims to highlight the rights of the Palestinians and the Israeli occupation, with academics and non-governmental organizations worldwide enticed to cut their relations with Israel.

The European Union has issued a new directive urging its 28 member states not to cooperate with Israeli entities that are based or even partly operate in the occupied West Bank, East Jerusalem (al-Quds) and the Golan Heights.

"Italian activists have gathered in Rome to demonstrate against what they call Israel's stealing water from Palestinians.",23/03/2014, online at: http://www.presstv.ir/detail/2014/03/23/355740/italians-slam-israel-over-stealing-water/

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❖ Jordan pins water hopes on controversial pipeline project

23 March. Jordan, one of the world's most water scarce states, is facing a "perfect storm of pressures" when it comes to water. This includes chronic scarcity, over-use, waste, and a massive increase in demand caused by refugee arrivals, according to a new report published this month by the NGO Mercy Corps.

To add to the water stress, the country is currently undergoing its driest rainy season in decades.

One proposed solution is due to be implemented by mid-2018 following Jordan's signing of a controversial water sharing agreement with Israel and the Palestinian authorities in December 2013 after decades of discussions.

The agreement paves the way for the long-discussed Red Sea Dead Sea Water Conveyer (RSDSWC) project, though in a much reduced form. It includes the construction of a desalination plant at the Jordanian port of Aqaba, which will desalinate 800-1,000 million cubic metres (mcm) per year shared by participating countries, and the pumping of brine to revive the Dead Sea via a 180km pipeline/canal.

According to the Ministry of Water and Irrigation, Jordan will have chosen the contractor by April 2015, construction will begin at the end of 2015, and implementation will last almost 2.5 years.

"With this, we will have solved Jordan's problems at least for the next 30 years," said Nabeel Zoubi, programme manager for the Red-Dead Sea programme at the ministry.

The plant is expected to produce at least 80 mcm every year, according to Zoubi. "Israel will buy approximately 50 mcm from Jordan at a cost of US$0.42 per cubic metre and the rest - approximately 30-40 mcm - will go to Jordan's governorate of Aqaba," Zoubi added.

According to the agreement, Jordan can purchase around 50 mcm of water from Israel (from the Sea of Galilee) to provide water to Amman and the northern part of Jordan.

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"There is no other way Jordan can address water scarcity given the increasing population and challenges brought by climate change," said Zoubi.

Cost concerns

But some experts have voiced concerns about the RSDSWC project due to the cost, estimated at US$4 billion, and the potential environmental risks of delivering brine to the Dead Sea.

"It is a suitable solution, but it is very challenging due to the current political context, regional unrest, geographical location and its high cost," environmentalist and climate change expert Amal Dababseh told IRIN. "The project will be located along the Rift Valley, which is quite seismically active. That will make any donor think twice before they fund a project like this."

The project has received moral and technical support from the World Bank, which published a feasibility study, but so far no funding has been earmarked for the project, and it is still not clear who will pay for the infrastructure.

Jordan says it is trying to secure funding for the pipeline phase of the project from "neighbouring and friendly" countries: "Saving the Dead Sea is an international responsibility and not only Jordan's," Zoubi told IRIN.

The World Bank office in Jordan told IRIN that "Jordan is eligible for the World Bank's loans and financial instruments but has not requested any financial assistance from them for the Red-Dead [project]."

Environmental impact

As well as providing a source of fresh water in a water-scarce country, the pipeline project aims to revive the Dead Sea, which has been receding at a rate of more than one metre a year.

"There is a unique ecosystem in the Dead Sea area - plants, birds, insects, micro-organisms that must

be protected. Also, mineral extraction [for beauty products] is very important for Jordan and must be maintained," said Dababseh.

But water expert and international consultant Valerie York argues that "the amounts of water/brine channelled into the Dead Sea would be a fraction of the amount required to compensate for annual decline in Dead Sea levels."

"Moreover," she says, "such a Red Sea Dead Sea link could lead to environmental disaster."

Citing the World Bank's feasibility study, York told IRIN in a telephone interview that the mixing of the two seas' waters (the introduction of brine into the Dead Sea) "could produce a chemical reaction that would possibly create gypsum and algae".

Last month, the Ministry of Water and Irrigation issued a statement warning that it is already concerned about "meeting people's needs" for drinking water this summer after the country received only 31.3 percent of its long-term average annual precipitation this winter (rainy season), [http://mwi.gov.jo/sites/ar-jo/Lists/List1/DispForm.aspx?ID=196] which left its dams at 43 percent of their capacity.

"With few additional resources within the country that can be developed to narrow the gap, Jordanians could face absolute water poverty with only 90 cubic metres per head per year by 2025," writes York in a working paper. [http://www.nccr-trade.org/fileadmin/user_upload/nccr-trade.ch/wp5/5.5a/Valerie_Yorke_NCCR_WP_2013_19_v3.pdf]

York and many environmentalists argue for an alternative solution to Jordan's water problems: stronger regional water sharing and better use of existing resources. Many experts worry the pipeline scheme will not provide enough water, and will take years to finish, as Jordan's water crisis continues to deepen.

Acute scarcity

Ranked as at best the fourth most water scarce country in the world, Jordan has an annual per capita

supply of 145 cubic metres, down from 360 cubic metres in 1946, which was two years before Jordan welcomed many of the 700,000 Palestinians who fled the 1948 war.

Groundwater, which makes up 54 percent of total water supply, is challenged by "unsustainable abstraction" due to "population growth and agriculture expansion", according to the government's 2010-2022 water strategy. Water experts warn that groundwater sources in Jordan are over-exploited by up to 200 percent of the safe yield level.

"Ten out of the 12 groundwater sources in Jordan are facing over-extraction, sometimes at about twice their recharge rate," said Atef Kharabsheh, from the International Research Center for Water, Environment and Energy at the Balqaa Applied University.

"This is alarming as the population continues to grow," he said.

Things are not any better above ground: Jordan's access to surface water is limited and is subject to trans-boundary water agreements. Jordan has long accused Israel of over-pumping the Jordan river, which is now highly polluted, [_ and has also claimed that neighbouring Syria violates a 1987 agreement on sharing of the Yarmouk river.

"Syria built over 47 dams over Yarmouk river, which obstructed Jordan's access to it," said Dababseh.

Hosting pressure

Since the beginning of the Syrian crisis, Jordan has received more than 1.3 million Syrians. Over 600,000 of them are registered as refugees with the UN Refugee Agency (UNHCR).

This has added tremendous pressure to the country's limited water resources. Zaatari camp, which is home to 92,000 Syrians, consumes over a million litres of water every day, according to the UN Children's Fund (UNICEF).

The result has been delays and even interruptions to state water supplies to Jordanians, provoking protests and riots, especially in northern governorates, where more than 80 percent of Syrians reside in host communities.

Even purchasing water has become "impossible" for some Jordanians. "We beg the trucks to stop and sell us some water, but they continue their way to the camp [Zaatari]," said Ahmad Maseed, a resident of Mafraq city in Jordan.

"Things were never that bad two years ago," he added.

"Jordan pins water hopes on controversial pipeline project", 23/03/2014, online at: http://www.unric.org/en/latest-un-buzz/29111-jordan-pins-water-hopes-on-controversial-pipeline-project

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❖ Jordan in Constant Water Crisis" – UN Expert Urges Long-Term Solution While Tackling Emergencies

AMMONNEWS - The United Nations Special Rapporteur on the human right to safe drinking water and sanitation, Catarina de Albuquerque, called on the Government of Jordan to take a holistic approach to its water and sanitation strategies.

"Jordan is at a critical moment and is struggling with severe water shortage issues," Ms. de Albuquerque said at the end of a six-day visit to Jordan. "The existing emergency measures to the water scarcity problem are not sufficient or sustainable."

"There must be a link between current emergency needs with a long-term, comprehensive development strategy that ensures access to water and sanitation for all people in Jordan," she stressed.

The water and sanitation systems are also struggling to ensure sustainability. The expert called on the Government of Jordan to "accord clear priority to water for human consumption over other uses and to explicitly recognize the human rights to water and sanitation in the law."

"The current system creates injustices," noted the expert. "I met a 64 year-old man, Sulaiman Ali who has been living with his wife in his own house in a suburb of Amman for over 20 years. His house is still not connected to the water network despite his repeated applications to the water authority. He is forced to devote almost 50 per cent of his monthly income to paying water tankers and sludge collection," Ms. de Albuquerque said.

The Special Rapporteur called on the Government to translate its political will into a long-term strategy to balance sustainability and affordability of the water and sanitation systems.

"This should result in a new tariff system that requires better-off households to pay higher tariffs, while poorer households would be guaranteed a lower, subsidized price," she said. "The revision must extend to non-domestic water tariffs. The tariff system should aim at balancing water savings and adequate provision."

"During the visit, I was very moved by the longstanding generosity and real hospitality of the Jordanian Government and the Jordanian people in accommodating successive waves of refugees in their country," the human rights expert noted.

"I urge both the Government and the international community to further work together to shift from the current emergency stance to a proper medium and longer-term response in order to ensure the sustainable provision of water and sanitation not only to refugees but to the wider Jordanian population," Ms. de Albuquerque concluded.

Jordan is one of the three most water scarce countries in the world. The severe water scarcity has been exacerbated by drought, depletion of groundwater reserves, population growth, inflow of migrant workers and climate change. This combined with several waves of refugees resulting from conflicts in the region – the latest from Syria – has increased these pressures.

Despite these difficulties, considerable progress has been made: 98 per cent of households are connected to the water network and 68 per cent are connected to the sewerage network, 98 per cent of the collected wastewater being treated.

The Special Rapporteur will present a formal report on this mission to an upcoming session of the UN Human Rights Council in September, which will include the final findings and recommendations to the Government of Jordan.

"Jordan in Constant Water Crisis" – UN Expert Urges Long-Term Solution While Tackling Emergencies", 19/03/2014, online at: http://en.ammonnews.net/article.aspx?articleno=24637#.Uy6ihqh_tb0

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❖ Gidon Bromberg: Jordan River Shows Water Can Be a Path to Peace, Generate Will for Change

At last month's launch of the USAID Water and Conflict Toolkit at the Wilson Center, Gidon Bromberg explained that the toolkit is about much more than just conflict. "It's put very much in forefront the possibilities of peacebuilding," he says in this week's podcast. "Water is an opportunity in areas where there aren't many opportunities."

"Whatever your neighbor does also impacts you, and vice versa"

Bromberg, the Israeli director of EcoPeace/Friends of the Earth Middle East, argues that a shared dependence on clean water can bring communities together, even in the most divided places. If you design a program that speaks to both self-interest and mutual gain, which water provides for, "you're really changing mindsets on the ground," he says. "Whatever you do of course impacts your community, but whatever your neighbor does also impacts you, and vice versa."

He uses the Jordan River, which has headwaters in Syria and forms the border between Israel/the West Bank and Jordan, as an example. Over the last 50 years, 96 percent of its freshwater has been diverted for domestic and agricultural use, and annual flow dropped from 1.3 billion cubic meters to less than 30 million cubic meters. Despite a treaty signed by Jordan and Israel 20 years ago, there was "no political will" to implement the water rehabilitation aspect of it.

In 2013, however, after years of working through a cross-national committee on rehabilitation which included many local leaders, the Israeli Water Authority announced their decision to pump water regularly from Lake Kinneret into the lower Jordan River to restore its suffering ecosystem:

I had a water minister from both sides come and say, 'You guys, you environmentalists, you're dreamers, you're tree-huggers! Water is too scarce! We're not going to waste water to allow it to flow down the River Jordan. We're not going to allow water to go beyond our borders and empower the other side, the enemy.' Well, that was said to us a decade ago. Today, that same leadership is carrying the flag of rehabilitating the Jordan River. This is their project, this is their political leadership, this is their success.

Such a successful initiative "didn't happen by accident," Bromberg says. It took creating political will, "and the people who created that political will were the kids in the schools because they were first, and the leaders followed them, not vice versa."

Bromberg believes that will for change starts from the bottom-up, through public awareness and practical educational initiatives on where water comes from, and then "doing the same thing next door, with the community on the other side."

"Gidon Bromberg: Jordan River Shows Water Can Be a Path to Peace, Generate Will for Change", 21/03/2014, online at: http://www.newsecuritybeat.org/2014/03/gidon-bromberg-jordan-river-shows-water-path-peace-generate-change/#.UzKGF6h_tA1

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❖ Jordan hopes controversial Red Sea Dead Sea project will stem water crisis

Chronic scarcity, overuse, waste and a surge in demand caused by refugees has paved the way for desalination plan

Jordan, one of the most water-scarce states, is facing a perfect storm of pressures including chronic scarcity, overuse, waste and a surge in demand caused by refugee arrivals, according to a report by Mercy Corps, an NGO.

To add to the water stress, the country is undergoing its driest rainy season in decades. One proposed solution is to be implemented by mid-2018, after Jordan's signing of a controversial water-sharing agreement with Israeli and the Palestinian authorities in December, after decades of discussions.

The agreement paves the way for the Red Sea Dead Sea water conveyor (RSDSWC) project, though in a much-reduced form. It includes the construction of a desalination plant at the Jordanian port of Aqaba, which will desalinate 800-1,000m cubic metres (mcm) per year, to be shared by the participating countries, and the pumping of brine to revive the Dead Sea, through a 180km pipeline/canal.

According to the water ministry, Jordan will have chosen the contractor by April 2015, construction will begin at the end of that year and implementation will last almost two and a half years. "With this, we will have solved Jordan's problems at least for the next 30 years," said Nabeel Zoubi, project manager for the Red-Dead Sea programme at the ministry.

The plant is expected to produce at least 80 mcm every year, according to Zoubi. "Israel will buy approximately 50 mcm from Jordan at a cost of US$0.42 (£0.25) per cubic metre and the rest – approximately 30-40 mcm – will go to Jordan's governorate of Aqaba," Zoubi added.

According to the agreement, Jordan can purchase about 50 mcm of water from Israel (from the Sea of Galilee) to provide water to Amman and the northern part of Jordan.

"There is no other way Jordan can address water scarcity, given the increasing population and challenges brought by climate change," Zoubi said.

But some experts have voiced concerns about the RSDSWC project, due to the cost, estimated at US$4bn, and the potential environmental risks of delivering brine to the Dead Sea.

"It is a suitable solution, but it is very challenging due to the current political context, regional unrest, geographical location and its high cost," the environmentalist and climate-change expert Amal Dababseh said. "The project will be located along the Rift Valley, which is quite seismically active. That will make any donor think twice before they fund a project like this."

The project has received moral and technical support from the World Bank, which published a feasibility study, but so far no funding has been earmarked for the project, and it is still not clear who will pay for the infrastructure.
Jordan says it is trying to secure funding for the pipeline phase of the project from "neighbouring and friendly" countries: "Saving the Dead Sea is an international responsibility and not only Jordan's," Zoubi said.

The World Bank office in Jordan said: "Jordan is eligible for the World Bank's loans and financial instruments but has not requested any financial assistance from them for the Red-Dead [project]."

Environmental impact

As well as providing a source of fresh water in a water-scarce country, the pipeline project aims to revive the Dead Sea, which has been receding at a rate of more than one metre a year.

"There is a unique ecosystem in the Dead Sea area – plants, birds, insects, micro-organisms that must be protected. Also, mineral extraction [for beauty products] is very important for Jordan and must be maintained," Dababseh said.

But water expert and international consultant Valerie York argues that "the amounts of water/brine channelled into the Dead Sea would be a fraction of the amount required to compensate for annual decline in Dead Sea levels". "Moreover, such a Red Sea Dead Sea link could lead to environmental disaster."

Citing the World Bank's feasibility study, York said the mixing of the two seas' waters (the introduction of brine into the Dead Sea) could produce a chemical reaction that would possibly create gypsum and algae.

Last month, the water ministry expressed concern about supplies of drinking water this summer, after the country received only 31.3% of its long-term average annual precipitation this winter, which left dams at 43% of their capacity.

"With few additional resources within the country that can be developed to narrow the gap, Jordanians could face absolute water poverty, with only 90 cubic metres per head per year by 2025," York wrote in aworking paper.

York and many environmentalists argue for an alternative solution to Jordan's water problems: stronger regional water sharing and better use of existing resources. Some experts worry the pipeline scheme will not provide enough water, and will take years to finish, as Jordan's water crisis continues to deepen.

Ranked as, at best, the fourth most water-scarce country in the world, Jordan has an annual per capita supply of 145 cubic metres, down from 360 in 1946, two years before Jordan welcomed many of the 700,000 Palestinians who fled the 1948 war.

Groundwater, which makes up 54% of total supply, is challenged by unsustainable abstraction due to population growth and agriculture expansion, according to the government's 2010-22 water strategy. Experts warn that groundwater sources in Jordan are overexploited by up to 200% of the safe yield level.

"Ten of the 12 groundwater sources in Jordan are facing overextraction, sometimes at about twice their recharge rate," said Atef Kharabsheh, from the International Research Centre for Water, Environment and Energy at the Al-Balqa Applied University. "This is alarming, as the population continues to grow."

Things are not any better above ground: Jordan's access to surface water is limited and subject to transboundary agreements. Jordan has long accused Israel of overpumping the Jordan river, which is highlypolluted, and has also claimed that neighbouring Syria violates a 1987 agreement on sharing of the Yarmouk river.

"Syria built more than 47 dams over Yarmouk river, which obstructed Jordan's access to it," Dababseh said.

Since the beginning of the Syrian crisis, Jordan has received more than 1.3 million Syrians, more than 600,000 of whom are registered as refugees.

This has added tremendous pressure to the country's limited water resources. The Zaatari camp, home to 92,000 Syrians, consumes more than a million litres of water every day, according to the UN children's fund. The result has been delays and interruptions to state water supplies to Jordanians, provoking protests and riots, especially in northern governorates, where more than 80% of Syrians reside in host communities.

Even purchasing water has become difficult for some Jordanians. "We beg the trucks to stop and sell us some water, but they continue their way to the Zaatari camp," Ahmad Maseed, a resident of Mafraq city in Jordan, said. "Things were never that bad two years ago."

"Jordan hopes controversial Red Sea Dead Sea project will stem water crisis", 20/03/2014, online at: http://www.theguardian.com/global-development/2014/mar/20/jordan-water-red-sea-dead-sea-project

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❖ UN expert urges long-term, rights-based approach to water crisis in Jordan

17 March 2014 – As Jordan struggles with severe water shortage issues – ongoing drought, population growth and now waves of refugees fleeing the Syrian conflict – the country is at a critical moment, said a United Nations independent expert today, emphasizing its need to take a holistic, long-term approach to its water and sanitation strategies.

"The existing emergency measures to the water scarcity problem are not sufficient or sustainable," said UN Special Rapporteur on the human right to safe drinking water and sanitation, Catarina de Albuquerque, wrapping a six-day visit to Jordan.

"There must be a link between current emergency needs with a long-term, comprehensive development strategy that ensures access to water and sanitation for all people in Jordan," she insisted.

Jordan is one of the three most water-scarce countries in the world. The severe shortage of water has been exacerbated by drought, depletion of groundwater reserves, population growth, inflow of migrant workers and climate change. This, combined with several waves of refugees resulting from conflicts in the region – the latest from Syria – has increased these pressures.

Despite these difficulties, considerable progress has been made: 98 percent of households are connected to the water network and 68 percent are connected to the sewerage network, with 98 percent of the collected wastewater being treated.

Still, said Ms. De Albuquerque, the current systems lack sustainability and affordability. She called on the Jordanian Government to make water for human consumption the highest priority over other uses and to "explicitly recognize the human rights to water and sanitation in the law".

"The current system creates injustices," noted the Special Rapporteur. "I met a 64 year-old man, Sulaiman Ali who has been living with his wife in his own house in a suburb of Amman for over 20 years. His house is still not connected to the water network despite his repeated applications to the water authority. He is forced to devote almost 50 percent of his monthly income to paying water tankers and sludge collection," Ms. de Albuquerque said.

The Special Rapporteur suggested the implementation of "a new tariff system that requires better-off households to pay higher tariffs, while poorer households would be guaranteed a lower, subsidized price". Such a system, she said, should aim at balancing water savings and adequate provision.

Noting the "generosity and real hospitality" with which the Jordanian Government and the Jordanian people are accommodating successive waves of refugees in their country, the expert urged both the Government and the international community "to further work together to shift from the current emergency stance to a proper medium and longer-term response in order to ensure the sustainable provision of water and sanitation not only to refugees but to the wider Jordanian population."

The Special Rapporteur will present a formal report on this mission to an upcoming session of the UN Human Rights Council in September, which will include the final findings and recommendations to the Government of Jordan.

Independent experts or special rapporteurs are appointed by the Geneva-based Council to examine and report back on a country situation or a specific human rights theme. The positions are honorary and the experts are not UN staff, nor are they paid for their work.

"UN expert urges long-term, rights-based approach to water crisis in Jordan", 17/03/2014, online at: http://www.un.org/apps/news/story.asp?NewsID=47364&Cr=Jordan&Cr1=#.UzKHZqh_tA1

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❖ Queen Rania joins discussion on JRF youth development strategy

AMMONNEWS - Queen Rania Al Abdullah today joined 120 youths from across the Kingdom who are all active participants in various programs run by the Jordan River Foundation (JRF) in a discussion to outline the foundation's strategic youth development plan for the next 5 years.

The discussion, held at the King Hussein Youth City, is the first of many activities planned for the future that will include the involvement of local institutions in both the public and the private sector. The aim of these activities is to build a comprehensive strategy for youth development that can be implemented by all constituents of the community so as to achieve the best results based on the opinions, ideas, and initiatives of Jordanian youth.

Her Majesty told the participants how important their opinions are due to the fact that they all face challenges and thus have a big role in identifying priorities. She asserted the importance of their participation in the process of drawing, not just implementing future plans.

Queen Rania had the chance to talk with participants at the workshop as they were split into different groups for discussion. The first group, under the title of "How I think", focused on the youth's perception of the community and the various stakeholders. This group focused on how youths interact with these different components from their vantage point.

In another group, titled "Me and My Community", participants were asked to create their own community based on dialogue. Group members prepared a list of strengths and weaknesses to help identify relevant institutions of authority and their importance in their imagined community.A group titled "I am able to change" looked into how youth can contribute to their communities and also discussed the various societal institutions that can help them achieve and implement change.

All group discussions aimed to showcase the ideas and issues of most relevance and importance from the perspective of the youth as well as to shed light onto viable solutions that could be implemented across Jordanian governorates.
The discussions also served as a platform for receiving feedback from the youth, that would

ultimately help JRF develop adaptable solutions. This reasserts the notion that JRF does not think on behalf of the youth when developing their programs, but instead makes them an active ingredient in the planning process as well.

JRF General Director, Ghaleb Qudah, said that the youth development strategy of the foundation for the upcoming 5 years will focus on strengthening communication and networking between more than 22,000 Jordanian youths across the Kingdom.

As part of the strategy, JRF will also establish groups in each governorate who will work on finding solutions to local challenges, allowing youth to take a crucial role in the development process and endowing them with the platform for making decisions relevant to issues that affect them, their lives, and communities.

As well, the strategy being devised aims to include youths in issues and programs dealing with child protection, as well as involve them in civil and economic participation, employment, and extracurricular activities. Another objective of the strategy is to engage the youth by providing them with spaces for dialogue and interaction, empowering them with skills demanded by the job market, enabling them for brighter futures.The selection of the participants in the workshop was based on their level of activity and effectiveness in their own communities as well as their ability to clearly present their ideas for programs and initiatives. All of the youths participating in the workshop had contributed their support to JRF programs for a period not less than three years.

The two-day workshop focused on generating ideas and activities pertinent to the development of a clear work plan for the youth of JRF. On the third day, participants showcased their results based on insights and suggestions provided by the youth in order to arrive at tangible and realistic ideas for implementation.

"Queen Rania joins discussion on JRF youth development strategy", 17/03/2014, online at: http://en.ammonnews.net/article.aspx?articleno=24621#.Uy6jtqh_tb0

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❖ Water a Key to Middle East Peace

Water is apparently a key part of the puzzle to peace between Israel and its Arab neighbors.

Water, that is the lack of it, is also a significant factor in the underlying volatility that threatens the peace among various Arab governments' long-held control over and between their respective countries. Without solving their water problems, the monarchies and other governments are in deep trouble providing for their enormous growing populations.

Israel is the most economically successful country in the world without being able to rely on natural resources. Since its inception in 1948, it has had no choice but to import all of its energy needs and squeeze its limited water availability.

It is a country where drought has been a regular occurrence ever since the Jews occupied it in biblical times. What aquifers it possessed were being drained in growing food to feed its growing population.

Agreements with Jordan are necessary for both countries to survive without a water war. The Sea of Galilee is reaching new critical lows.

Israel became the world's expert on efficiently using water. It successfully recycles 80 percent of its household wastewater. Spain, the next most efficient, only recycles 30 percent, while the United States just flushes everything down the toilet.

The discovery of gas off the Israeli shores has enabled it to capitalize on its expertise in desalination of seawater. Desalination takes a lot of energy and is highly capital intensive to build.

With the Tamara Field now producing gas, and the Leviathan on its way, Israel has the energy sources to produce water from the sea. This allowed it to enter contracts to supply the Palestinian Authority on the West Bank and Jordan with both gas and water.

No doubt Egypt will soon follow. Even Lebanon could be tempted since while Iran can supply Hezbollah with missiles, it can't supply it with gas and water.

Making a deal with Turkey is, as they say in the Land of Oz, a horse of a different color. Any pipeline would have to go through Cypriot waters. That is not going to happen until the matter of the occupying Turks in Cyprus gets resolved.

These new discoveries of gas sources and the ability to make fresh water at will are already reverberating across the other Arab states. They have their own serious internal conflicts that are tied to both water and oil resources.

Ten of the top 15 most water-poor states in the world are in the Middle East. None of the remaining countries in the Middle East is among the water rich to be sure. They all have significantly rising young populations that will need to be fed.

Saudi Arabia devotes a substantial part of its oil resources to desalination plants to maintain its agricultural growth. Its agricultural still cannot grow enough to feed the population. Lack of water is the biggest deterrent. Of course, it does not help politically that these industries are owned by the ruling elite and their cronies.

However, as the Israelis are demonstrating, with enough water, even peace in the Middle East can become possible.

"Water a Key to Middle East Peace", 17/03/2014, online at: http://www.moneynews.com/kleinfeld/middle-east-water-israel-gas/2014/03/17/id/559897/

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❖ When Water Scarcity Becomes Personal

"There are so many problems here around water," Sabeen said. Sabeen is Syrian. Last year she and her children fled Damascus, and now they live in northern Jordan in a one-room flat. Mattresses without sheets were tilted up against one wall. "Sometimes I can hardly breathe," she said. "There is no space."

And there is no water.

"Syrians renting apartments from Jordanian landlords don't get access to the building's water supply," Sabeen said. "The taps don't work in our apartment. We have to buy water from private wells. It isn't right. But we're desperate, so what else can we do?"

Like many Syrian refugees fleeing the civil war in their country, Sabeen has found another crisis in Jordan: water scarcity.

Already one of the world's driest countries, Jordan's lack of water has been badly exacerbated by the added pressures of 600,000 refugees -- the vast majority of whom are not in camps, but in Jordanian cities and towns. Half of these urban refugees don't have the luxury of running water.

And when there is no water, hygiene standards plummet. Bathing is infrequent and infections are on the rise. According to a UN assessment released in January, a third of refugee households don't have access to soap.

Simultaneously, water quality has dropped, leading to a rise in diarrheal diseases among young children. This is part of a world-wide epidemic: nearly 20 percent of the deaths of children under five results from water-related diseases.

But in Jordan, these problems are not the refugees' alone. As detailed in a new report by Mercy Corps, refugees have put immense pressure on Jordanian resources and infrastructure.
Mafraq City in northern Jordan is emblematic. Once home to 70,000 people, the city is now packed with 160,000, thanks to an additional 90,000 refugees who have moved there since the war began. Old neighborhoods are overrun. Multiple Syrian families squeeze into single-family flats. Shops have

been converted to makeshift homes, and some families rent rooftops and chicken coops. Children peek out from windows and doorways covered by cardboard and dirty sheets.

Water deficits in Mafraq City have quadrupled. Hospitals don't have adequate supplies, schools are dry, and mosques cannot perform daily ablutions.

"Water scarcity doesn't know Syrian or Jordanian," said Um Omar, a Jordanian woman. "It affects us all."

A potential health crisis looms. It is evident in the region's schools, where the influx of Syrian children has doubled the number of students using strictly rationed water supplies. Health and sanitation standards are imperiled. Without water, students cannot drink, flush toilets, or wash hands.

To buy more water, some school administrators have responded by raiding their budgets earmarked for critical supplies -- like paper.

"If you think a school without paper is bad," said one, "try a school without water."

International aid organizations such as Mercy Corps have for years sought ways to leverage limited resources through innovative programming; we are also finding opportunities for collaboration with the private sector. Since 2008, we have partnered with leading water technology company, Xylem, to solve the challenges of the water scarcity epidemic. For example, through a recent grant from the Xylem Emergency Response Fund, and with the help of their corporate citizenship and social investment program Xylem Watermark, we have been able to improve water infrastructure in northern Jordan through the construction of two new wells.

These new water access points have increased the water supply in the vicinity of Mafraq City and within the Zaatari refugee camp, itself home to up to 120,000 refugees. At full capacity, the two wells can provide enough water to meet the daily needs of approximately 88,000 Syrian refugees -- about 73 percent of the camp's population. The success of our investment with Xylem has led to the influx of additional support from UNICEF, adding momentum to our work in the region. In Jordan and elsewhere, the fruits of this cross-sector collaboration have resulted in advanced filtration systems, water-saving network improvements, improved sanitation tools, and better outcomes for those in need.

Sadly, those in need are numerous. Half of the world's hospital beds are filled with people suffering from water-related diseases. According to the World Health Organization (WHO), more than 3.4 million people die each year from water, sanitation, and hygiene-related causes. That is roughly the population of Los Angeles.

Today is World Water Day, and there is cause to celebrate the progress we have made around the world in alleviating thirst and illness. But we should not lose sight of how far we have to go. Water scarcity continues to touch millions of lives and is a daily source of hardship and death. Moving forward, we must creatively leverage partnerships and resources in ways that save and improve lives in the world's toughest places.

"When Water Scarcity Becomes Personal", 22/03/2014, online at: http://www.huffingtonpost.com/keith-proctor/when-water-scarcity-becom_b_5014571.html

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❖ Ethiopian Ambassador doubts need for mediator between Egypt and Ethiopia

Ethiopia's ambassador to Egypt said he doubted the need for mediation between Egypt and Ethiopia on the Grand Ethiopian Renaissance Dam, stressing the importance of constructive dialogue as the only alternative.

Ambassador Mahamoud Dirir said in a statement published by the Ethiopian Foreign Ministry on Monday that it is "naïve" to consider that ties between the two countries should "solely be viewed through the prism of the Nile issue."

Dirir denied reports of third party mediation between the two Nile Basin countries and said, "there are only two, and only two, countries in the entire world which are well-placed to mediate between Egypt and Ethiopia; and these are, of course; Ethiopia and Egypt, themselves."

He added that the role of Sudan as a partner has been pivotal to "ironing out" difficulties in the dialogue between Egypt and Ethiopia.

Dirir said the countries have enough experience to ensure that the Nile is a source of cooperation between Nile Basin countries, not a source of conflict.

On Monday, Prime Minister Ibrhaim Mehleb held talks with Egyptian Foreign Minister Nabil Fahmy in which they focused on relations with Nile Basin countries and the possibility for developing them. The cabinet said in a statement after the meeting that Egypt is currently dealing positively with all Nile Basin countries in order to preserve its strategic interests and out of recognition of the ambitions of these countries for development.

Ethiopia began diverting water from one of the Nile River's tributaries in May 2013, and is currently building the Grand Ethiopian Renaissance Dam, expected to be completed within three years. Egypt fears that the electricity-generating dam will have a detrimental effect on its lion's share of Nile water.

The latest round of talks between Egypt and Ethiopia ended on 10 February without the two sides resolving "sticking points". The "sticking points" that remain regard the formation of a committee to oversee the implementation of recommendations of a report detailing confidence-building measures concerning the dam and its effect on downstream nations.

Ethiopia said the talks in February "made no progress" because of a difference in opinion regarding the involvement of international experts. It said that while Egypt wants the involvement of foreign experts, Sudan and Ethiopia, do not see the need.

Sudan, which is also an interested party and, like Egypt, is a downstream country, was part of a series of tripartite talks between the three countries in November, December and January. However, they have not reached an agreement.

"Ethiopian Ambassador doubts need for mediator between Egypt and Ethiopia", 18/03/2014, online at: http://www.dailynewsegypt.com/2014/03/18/ethiopian-ambassador-doubts-need-mediator-egypt-ethiopia/

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❖ Ethiopia Sees Output at Africa's Biggest Power Plant by 2015

Ethiopia will begin generating electricity within 18 months from what will be **Africa**'s largest power plant, the government said.

The sale of 7.1 billion birr ($367 million) of bonds over the past three years to domestic investors, has contributed to the 27 billion birr spent so far on the 75.5 billion birr Grand Ethiopian Renaissance Dam hydropower project, said Zadig Abraha, deputy general director of the GERD national coordination office. The central bank in April 2011 ordered banks to buy **government bonds**equivalent to 27 percent of their loans to help fund infrastructure projects.

Ethiopia's funding of the 6,000-megawatt plant represents "the golden age of our history as far as economic development and public participation is concerned," Zadig said by phone on March 18 from the capital, **Addis Ababa**. "If we're to meet the power demand we have to construct these mega projects."

Africa's second-most populous country after **Nigeria** is boosting electricity output to cater for increased demand as economic growth surges. The economy expanded at an average 9.3 percent over the past four years and the government is targeting growth of more than 10 percent, which may lead to annual increases in electricity demand of as much as 35 percent, Zadig said.

An increase in Ethiopia's current generating capacity of 2,000 megawatts will also allow the country to reduce a trade deficit of $8.5 billion last year by selling excess electricity.

Power Exports

The government already exports power to Sudan and **Djibouti**. It's also building a transmission line to**Kenya** and is in discussions with Yemen and war-torn **South Sudan**, Zadig said. Once GERD is finished, and other hydropower projects including the 1,870-megawatt Gibe III are on line, Ethiopia may earn $2 billion a year from the exports, he said.

The construction of GERD is opposed by Egypt, which says it will reduce the flow of the Nile, the world's longest river that provides almost all its water. Egypt's opposition to the project blocked Ethiopia's access to foreign credit, he said.

"The only option on the table was to construct the dam by our own capacity," Zadig said, adding that the state-owned Ethiopian Electric Power Corp. and public contributions would fund the rest of the project.

Sudan, the other affected nation, supports the project that's scheduled for completion in 2018, partly because it will allow the country to import cheaper Ethiopian electricity. The dam is being built 18 miles (30 kilometers) from the Sudanese border on the Blue Nile River, the main tributary of the Nile.

Production Start

Two turbines at the plant will start producing 750 megawatts of power during the Ethiopian calendar year that begins Sept. 11, depending on rainfall patterns, Zadig said.

In 2012, Ethiopia invited an international panel of experts to study the project, which the government says will help curb flooding and improve water storage.

The panel concluded in June that further assessments need to be made on GERD's regional impact. It also advised modifications to the design to strengthen it structurally. Efforts by Ethiopia, **Egypt** and Sudan to form a committee to oversee the probes on the downstream effects have reached an impasse over the role of foreign experts.

Egypt wants construction paused while the studies are done on an issue that is a matter of "national security," Badr Abdelatty, a spokesman for Egypt's Foreign Ministry, said in a phone interview on March 15.

'Serious' Talks

"We ask upon the other side to be serious and to move forward to accept having international experts imported to assess the impact," he said. "Also for Ethiopians to provide more studies, more statistics."

Ethiopia should also respect colonial-era agreements and a 1959 accord between Sudan and Egypt that allocates all of the river's flow excluding evaporation to those two nations, Abdelatty said. By 2020, Egypt will require all of its assigned 55 billion cubic meters a year for vital use such as drinking, washing and sanitation, he said.

Nile riparian nations including Ethiopia, Kenya, **Tanzania** and **Rwanda** are in the process of ratifying a new agreement to create a joint commission to manage use of the river.

"Ethiopia Sees Output at Africa's Biggest Power Plant by 2015", 19/03/2014, online at: http://www.bloomberg.com/news/2014-03-19/ethiopia-sees-output-from-africa-s-biggest-power-plant-by-2015.html

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❖ Artists in Nile Project try to bridge political divisions

CAIRO — Egyptian musician Mina Girgis and Ethiopian-American singer Meklit Hadero started their music band the Nile Project to act as a new platform for dialogue and cultural exchange, away from the language of tension among the governments of the Nile Basin countries, which are currently embroiled in a water dispute

In the band's second tour since it formed two years ago, the Nile Project, with its 19 musicians and singers, traveled to Nile Basin countries, including Kenya, Tanzania, Ethiopia, Uganda and Egypt. The group sang their lyrics in local dialects and expressed their relationship with the Nile, not to convey messages of peace, but to send an invitation saying, "We have something in common. We should look at it and strengthen it before we resort to war."

"We are not trying to be a form of popular diplomacy that carries a message of peace from one country to another. This project doesn't belong to Egypt or Ethiopia alone. Rather, it is a project that brings together all the countries of the Nile Basin," Girgis, the Nile Project's founder, told *Al-Monitor*.

In August 2011, during Wafaa al-Nil — meaning the "Flooding of the Nile," a holiday that has traditionally been celebrated in Egypt to mark the river's annual flooding — the idea for the Nile Project came to Girgis when he attended a concert by an Ethiopian singer in America.

Girgis, who studied musicology and anthropology, spoke about the idea behind the Nile Project, saying it was aimed at "mixing music from the Nile Basin countries to reflect the cultures of the peoples of the region together. I thought about establishing a music project linking the Nile Basin countries, and then opening a space for interest and dialogue through cultural and environmental relationships."

Despite the many languages and dialects in the Nile Basin countries, the Nile Project has created harmony between them in a new type of music. "There are many common elements, from instruments, rhythms and such, which can be built upon. The *amadinda* instrument in Uganda is very much like the *tanboura* and *simsimiyya* in Egypt. The *adungu* looks like the *hareb*, the musical instrument of the Pharaohs," said Girgis.

Only two weeks before a concert do the band members meet and start composing and writing songs together. Girgis spoke about the difficulty of the experiment. "We tried to create a harmonious environment to reveal the inherent capabilities in musicians, and we managed to make a good musical product, although some artists had no knowledge of the cultures in other countries on the Nile River," he said.

Girgis criticized the idea of a "musical operetta" that transmits specific messages through songs. "Our musical history is filled with these songs that have a propagandist nature [and that seek to promote] a specific idea or message. But people no longer need this kind of 'cheap' art. I don't ask the musicians in the project to send messages about water or the environment. I only invite them to sing the music that reflects their association with the Nile and the songs that reflect the cultures of the Nile Basin countries."

Despite the common cultural traits among the peoples of the Nile Basin countries, a number of complex political, social and cultural issues have become a potential cause of conflict between these countries. This may be an obstacle that prevents possibilities for cooperation between these countries, according to a study by the Nile Basin Initiative.

Given these problems, the Nile Project does not limit itself only to music. "We tried to make it so that attending a concert and listening to the music of the Nile Project is not the end of the project. And we started a series of workshops for dialogue between university students and members of the project who came from different Nile Basin countries to look at the problems and discuss how to solve them, by building on the interest and acceptance for dialogue, which was created by the music in the first place," said Girgis.

Kasiva Mutua, a musician from Nairobi, Kenya, spoke with *Al-Monitor* about her experience playing with the Nile Project. "The project is a good chance to confirm that we are one fabric in the Nile Basin and can play one music," she said. But before participating in the project, she didn't expect the experiment to succeed because of the different cultures and languages. "Despite the differences, we worked together in good spirit. We were like a family linked by music," she added.

"I didn't have prior knowledge of Egyptian or Ethiopian music, and when the Nile Project started I was surprised by the new and different tunes and rhythms. Yet we were able to integrate our music production together," Mutua added.

"What does the word 'country' mean? … It means people who have no homes," sings Egyptian singer Dina el-Wedidi in the Nile Project with Ethiopian singer Selamnesh. The song employs both Ethiopian and Egyptian beats.

"The idea for the song came from mixing verses from poems by Bayram al-Tunsi written in the 1930s, poems by Fouad al-Qaoud in the 1960s and others by Marwa Jamal al-Din from our generation. All these verses reflect the situation in which we see our society now," said Wedidi.

Wedidi spoke to *Al-Monitor* about the Nile Project, which has become a personal artistic project. "The experience of the Nile Project has revealed very rich artistic material in African cultures. It was the first opportunity to get to know it because our problem in Egypt is that we always look to the north toward Europe and America, while we really need to look toward the south, to Africa."

Last year, Wedidi sang a song for the Nile Project called "Ya Ganouby," which is about the sad situation in the south of Upper Egypt. "The veterans of Egyptian music came from the south. Egypt's true folklore came from Upper Egypt. The south is in our true roots. But we are always absent from it," said Wedidi.

After its East Africa tour ends, the Nile Project will continue to deliver its message to new countries in Africa, Europe and Asia, to confirm the unity of the people of the Nile, despite the water dispute and the polarization promoted by government policies. The Nile Project is trying to build bridges of dialogue before the dispute escalates to a war over resources, given the environmental challenges and energy shortages in Africa.

"Artists in Nile Project try to bridge political divisions", 20/03/2014, online at: http://www.al-monitor.com/pulse/originals/2014/03/nile-river-basin-ethiopia-egypt-music.html

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❖ Grand Ethiopian Renaissance Dam will Start Generating 700 MW of Power by Next Year

The Grand Ethiopian Renaissance Dam (GERD) constructed over the Blue Nile River (Abay) will start producing 700 MW of electric power by the next year, according to The Reporter.

The announcement came during a press conference called by the office of the National Council for the coordination of public participation on the construction of the Grand Renaissance Dam on Wednesday March 12.

"By next year two of the turbines among the 16 will start to generate 375 MW electric power each", Zading Abreha, Deputy Director General of the office said.

The GERD project, launched three years ago has now completed 30 percent of the construction of the dam. The project so fas has and consumed 27 billion birr, out of which, 7.1 birr is collected from the public, according to Zading.

"Grand Ethiopian Renaissance Dam will Start Generating 700 MW of Power by Next Year", 19/03/2014, online at: http://www.2merkato.com/news/alerts/2879-ethiopia-grand-ethiopian-renaissance-dam-will-start-generating-700-mw-of-power-by-next-year

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❖ Work on Ethiopia mega-dam proceeding 24/7

ADDIS ABABA – Construction work is proceeding around the clock on Ethiopia's multibillion-dollar Grand Renaissance Dam project in hopes of completing the mega-project on schedule, an Ethiopian official said Wednesday.

"We're proceeding as per the construction timeline," Simegnew Bekele, the project's chief engineer, told foreign reporters visiting the construction site.

"Around 32 percent of the dam construction is finalized... No financial or technical problems are encountered thus far," he said.

First begun in April 2011, the project is fast approaching its third anniversary.

When finalized in 2017, it will boast a 6000-megawatt production capacity, according to government sources.

Bekele insisted that his engineers had not made any compromises in terms of safety precautions.

"There are international guidelines, rules and standards, and we strictly adhere to them," he asserted.

"We have hands-on practice. We have experience… building and operating hydroelectric dams," said the project's chief engineer.

"Our contractors and consultants are world-class experts," he added. "By 2017, we will complete construction."

Bekele also reaffirmed that Nile water would be "managed" – not "consumed or diverted" – to another basin.

"It [the dam] benefits Egypt and Sudan by providing flood prevention, water use efficiency, energy uplift and reduction of sediment load," he asserted.

The dam project has caused tensions with Egypt, which fears the potential reduction of its own share of Nile water.

Addis Ababa, however, insists the project will benefit downstream states Sudan and Egypt, both of which can purchase the electricity that the dam will generate.

"Work on Ethiopia mega-dam proceeding 24/7", 19/03/2014, online at: http://www.turkishpress.com/news/395791/

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❖ Construction of the largest dam in Eritrea is nearly completed

Construction of Gergera Dam, which began in late 2010 near the town of Teramni, is at an 'advanced stage', a government spokesman said on Thursday.

When completed the dam will supply water to the towns of Mendefera, and Dekemhare, as well as provide electricity, the official added.

Built along a gorge, Gergera dam will be the largest cyclopean masonry dam in the country, and will have the capacity of holding **35 million** cubic meter of water.

On Monday, Eritrea announced it will build Tekera Dam that will have the capacity to hold **20 million** cubic meter of water to supply Asmara and its environs.

Since independence, Eritrea has built more than **300** agriculture and water reservoir dams to ensure food security and alleviate potable water shortages.

"Construction of the largest dam in Eritrea is nearly completed", 20/03/2014, online at: http://www.madote.com/2014/03/construction-of-largest-dam-in-eritrea.html?showComment=1395354027778

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❖ Asean joins in hands in banning China's dam projects

Civil Society Organizations (CSOs) from Asean countries have committed to making collective efforts to push for the banning of dam construction in the Asean countries by China which can damage natural environment, according to the joint meeting of Asean People's Forum (2014) held in March 20. China's power demands have been on the rise.

Srisuwan Kuankachor, assistant director from Thailand-based TERRA said, "China built six dams on the upstream of Mekong River. Plans are under way to build Saraburi dam in Laos, on the downstream of Mekong."

The Mekong River Commission (MRC) was formed by agreement between the governments of Cambodia, Lao PDR, Thailand and Vietnam, to jointly manage the shared water resources and economic development of the Mekong River. But MRC's works remain ineffective. Like the Mekong River, Myanmar should strongly oppose the construction of dam on Thanlwin River. Myanmar government should oppose the project to be implemented on the upper reach of Thanlwin River in cooperation with the CSOs.

Construction of large-scale hydropower projects by China on the rivers of Asean countries has caused natural disasters such as flooding, damages of river courses and harmed the socio status of local people.

"The government's power distribution to 26 percent of the country's total area is facing many difficulties," said Myint Aung from REAM, adding: power distribution to the remaining 74% will take much time. People no longer wait for it. Some regions see the running of self-reliant small-scale power generation system. The government should provide them with assistances (not only in legal advice but also in cash) for their growth. He also advised that efforts should be made for more power generation to meet the country's power demands.

"Asean joins in hands in banning China's dam projects", 22/03/2014, online at: http://www.elevenmyanmar.com/index.php?option=com_content&view=article&id=5494:asean-joins-in-hands-in-banning-china-s-dam-projects&catid=44:national&Itemid=384

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❖ Government Calls for Laos To Reexamine Mekong Dam

PHNOM PENH — The Cambodian government on Thursday reiterated calls for Laos to reconsider the construction of a dam on the Mekong River that could have serious ecological and economic impacts on people living downstream.

Environmental groups worry that the Don Sahong dam, to be built just upstream from Cambodia, could devastate fisheries that provide a major source of food for Cambodians living along the Mekong and Tonle Sap rivers.

Concerned parties met at a conference in Phnom Penh Thursday to discuss the dam.

Te Navuth, head of the government's National Mekong Committee, told the workshop that an environmental assessment done by Laos is unclear on how fish would migrate, and so more studies are needed.

The results of Thursday's discussions will be sent officially to the National Mekong Committee for consideration, said Tek Vannara, head of the NGO Forum, a consortium of nongovernmental organizations.

Local communities and civil organizations continue to express concerns about the project, including the conduct of its environmental impact studies.

"Government Calls for Laos To Reexamine Mekong Dam", 20/03/2014, online at:
http://www.voacambodia.com/content/government-calls-for-laos-to-exexamine-mekong-dam/1875471.html

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❖ Need for protecting Delhi's water sources

Problems arising out of over-extraction of groundwater, encroachment of water bodies and contamination of clean water supplies were raised during a meet organised on the occasion of World Water Day here on Saturday.

Some of the speakers spoke about the neglect of water sources and improved disposal of dirty water. "The Capital has 60 per cent of untreated sewage and 40 per cent sewage remains unutilised. The official government list also shows 700 ponds but their condition is not known. If these ponds were to be filled with enough water, we would not need to harvest water on rooftops. Harvesting water from these ponds would solve much of our problem," said Suresh Babu, director River Basins and Water Policy, WWF.

WWF-India CEO Ravi Singh spoke about how "in Delhi maximum water is extracted from the ground with pumps which has resulted in sinking of the water table. This is resulting in high amount of pollution level in river waters which in turn is adversely affecting the bio-diversity."

Mr. Singh said that in the absence of fresh water, polluted water is being used for irrigation. He cautioned about its effects and said: "Such water contains high amount of metallic/chemical content. So everything we eat or drink – be it fruit, milk, vegetable – all contain high levels of toxins."

Noting that "tomatoes, red chilli and pomegranate have the highest amount of chemical elements", he cautioned that "in future consuming polluted water and food material will lead to low mental health in children and youth. It will affect their success rate and hence, directly affect the GDP of the country."

To address the problem of water sanitation and conservation, WWF-India has also partnered with HSBC and environment NGOs Water Aid and Earth Watch. Speaking on the occasion, Naina Lal Kidwai, director HSBC Asia-Pacific and Country Head, India, said: "Access to safe water and sanitation is the first step out of poverty for individuals; managing water resources effectively sustains ecosystems, industries and communities by protecting the vital water resources they depend upon. We have prioritised the need to develop awareness and create change towards water sanitation,

conservation and management and look forward to seeing its compounded positive impact on society."

"Need for protecting Delhi's water sources", 23/03/2014, online at: http://www.thehindu.com/news/cities/Delhi/need-for-protecting-delhis-water-sources/article5821860.ece

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❖ Pakistan Water Summit: foreign technical experts invited

Federal government has invited technical experts of international agencies including World Bank (WB), Asian Development Bank (ADB), International Water Management Institute (IWMI), JICA and United Nations (UN) in 'Pakistan Water Summit' to be held on Thursday (March 20) to discuss and prepare water policy on the basis of 14 themes, it is learnt.

Prime Minister Muhammad Nawaz Sharif would inaugurate the "Pakistan Water Summit" to be convened by the Planning Commission in collaboration with the Ministry of Water and Power. The summit partners, in co-operation with the Planning Commission and the Ministry of Water and Power, will be responsible for the effective delivery of the water summit outcomes.

According to documents available with Business Recorder, experts from multilaterals including Asian Development Bank (ADB), World Bank (WB), and bilateral including Australia Department of Foreign Affairs and Trade, International Center for Integrated Mountain Development (ICIMOD), Internal Water Management Institute (IWMI), Japan International Co-operation Agency (JICA) and the United Nations (FAO, UNESCO, UNICEF and UNDP) would participate in the Summit.

The Water Policy would consist of 14 themes are including: (1) Understanding Water Security and its Impacts on National Security (2) Water-Food-Energy Nexus (3) Water Infrastructure as Engine of Growth (4) Innovative Financing of Water Infrastructure (5) System Efficiency for Urban Utilities (6) Agriculture Water Productivity (7) Ground Water Sustainability (8) Water Supply and Sanitation [Urban and Rural] (9) Water Technology for the 21st Century (10) Climate Change impacts on Water Availability [Droughts, Floods and Glaciers) (11) Tran boundary Water[Internal and National Dialogue] (12) Research and Education (13) Water and Health and (14) Industrial Pollution.

Federal Ministers Planning and Development, Water and Power, Finance, National Food Security and Research, Interprovincial Co-ordination, Science and Technology, Federal Secretaries and others would participate in the Summit. The experts of Provincial government authorities would include Planning and Development, Irrigation, Agriculture, Irrigation and Drainage Authorities, Local Government and Rural Development, Finance, WASAs and Public Health Engineering would participate in the Summit.

The experts of private sector organisation would include Federation of Chamber of Agriculture, Pakistan Chamber of Commerce, Pakistan Agriculture Council, and Pakistan Network of Water Utility Operators would also participate. The experts from civil society and academia would include Arid Agriculture University, LEAD Pakistan, Lahore University of Management Science (LUMS), National University of Science and Technology (NUST), National Defence University (NDU), Pakistan Water Partnership (PWP), Sustainable Development Policy Institute (SDPI), UET Taxila and the University of Agriculture Faisalabad would participate in the Water Summit.

An official source told Business Recorder while talking about water policy that being an arid country, Pakistan relies heavily on annual glacier melts and monsoon rains. He said that water from these sources flows down the rivers and out to the sea and most parts of the country receives scant rainfall and has little or no access to surface water.

He said that the total available surface water is about 153 million acre feet (MAF) and the total ground water reserves are approximately 24 MAF, of which a substantial part has been mined without allowing for natural recharge. He said that currently estimated at 180 million, the population of Pakistan is set to double in 2.5 decades. This means that the per capita availability of water will decrease rapidly, he said. There is likely to be a net decrease rather than an increase in the country's water resources due to a number of factors including population growth, climate change, and over exploitation of water, he said.

The official said that by 2003, Pakistan's per capita availability of water declined to the extent that it was categorised as water stressed country by the World Bank surpassing Ethiopia and on par with African countries such as Libya and Algeria. Currently, the situation is worse with 1200 m3 per capita water availability per year, he said.

He said that Pakistan has already used up resources existing in water cycle and there are no more additional supplies of water to mobilise. When it is said that another dam or reservoir is going to be put up, it doesn't necessarily mean there will be additional water coming in we are just re-appropriating what is already in the system, he said.

He said that there is a total of 136 MAF (million acre-feet) requirement of water including 119 MAF for agriculture, 4.8 MAF for industries, 10.5 MAF for municipal and 1.7 MAF for environment till to 2025.

The official said that Pakistan is moving towards the worst water shortage in coming decade due to inadequate water management practices, insufficient storage capacity and Indian avarice for water. In recent past, unfortunately, Pakistan could not gain points in favour of its case with India as well as in International Court of Arbitration, he said. He said that the Indus Water Treaty has now become practically ineffective as India is continuously violating all clauses of the treaty and stealing Pakistan's waters refusing its right as lower riparian country.

He said that the storage capacity of water reservoirs in Pakistan has reduced to 30% since 1976 as it was 16 million acre-feet (MAF) but now it is standing only at 10 MAF due to increasing silt, posing a threat to water and food scarcity. This decrease in the capacity is intensifying already prevailing shortage of water and will aggravate the situation in coming years amid ballooning population, he said.

He said that based on current projections, annual water availability (per capita) will be 855 m3 by the year 2020. As per international standards, a country is considered water stressed if per capita annual water availability falls down to 1800 m3 and water scarce if the same diminishes to 1000 m3, he said.

He identified key challenges facing by the country: (i) Financing of mega projects in water sector; (ii) Declining water table and endangered groundwater sustainability; (iii) Unrealistic season-wise and annual canal head withdrawals; (iv) Exceedingly high growth in demand of water; (v) Reservoir sedimentation; (vi) Absence of appropriate water legislation; (vii) Untapped Water; (viii) Inadequate carry over capacity; (ix) Sub-optimal use and low productivity; and (x)Low GDP contribution per unit of water

He said that in order to overcome the identified issues and challenges a collective and participatory approach is required to be adopted. Individuals and corporate citizens must engage with decision-makers across the board regarding rational and responsible use of water, he said.

He said that the Summit is aimed at framing out suggestions, recommendations and guidelines for preparation of Pakistan Vision 2025 with valuable and effective collaboration of the stake holders. He said that collaborative planning amplifies the prospect of carrying out planning and development process more successfully by involving stakeholders in the planning process. He said that the conference will help stake holders and Planning Commission to better understand the issues, analyse the strategies previously adopted and finally generate a productive feedback for working out Pakistan Vision 2025 and 11th Five Year Plan. The sub working group of water will address the issues, challenges and strategies related to water sector to be incorporated in Vision 2025 and 11th Five Year Plan, he said.

"Pakistan Water Summit: foreign technical experts invited", 19/03/2014, online at: http://www.brecorder.com/agriculture-a-allied/183/1164170/

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❖ World water day 2014: When water is death

Khalid Jogee is afraid of ever staying a night in any village of Sindh. His experience of staying a night at Dalan Jo Tarr located in Taluka Chachro, district Tharparkar, was nothing short of a nightmare. "I can't even imagine the kind of water my relatives use," Jogee said.

"It was one of the worst experiences of my life, staying in the village and having to use and consume the water. My whole body was swollen. I was unable to see properly," he shared. "Ever since, I do visit the village but I stay on only until I have my own water," he smiled. "Whenever I visit any village anywhere in Sindh, I ask about the source of the water and don't use it if it is groundwater."

With the recent focus on the suffering of the people of Tharparkar, a very important point is the crux of the problems of this region as well as many regions of Pakistan – the lack of access to clean water fit for human consumption.

"The worst situation of quality water is in southern parts of Punjab and Sindh," said Wateraid Pakistan Programme Manager, Policy and Advocacy, Abdul Hafeez. Information on the official website of Pakistan Council of Research in Water Resources (PCRWR) confirms that the concentration of arsenic in groundwater of several districts of Punjab and Sindh provinces has been observed through different water quality studies conducted by PCRWR, further adding that the natural presence of arsenic and other toxins in groundwater, the most common source of drinking water, is considered a worldwide public health crisis and an unprecedented natural disaster.

Hafeez said that underground water consumption in Pakistan is very common, and people use the water without proper testing. "The quality of water and its availability is a serious issue in Pakistan," he added. He urged the government to look into the matter seriously, suggesting that raising awareness about this could reduce the incidence of water-borne diseases.

According to Hafeez, the increased death toll in Tharparkar is the outcome of unavailability of water, and the water available being of bad quality.

"The people of Thar don't use drinkable water," said Zafar Junejo, CEO Thardeep. "The available water is not fit for human consumption," Junejo stressed. He said that different kinds of resulting diseases include kidney failure, liver disease, bone formation, teeth decaying and skin diseases.

Junejo informed this correspondent that not only fluoride but other elements like lead and arsenic are also found in the available water across the desert. "The water table will be disturbed in some parts of the district in the coming years," he warned, adding that appropriate measures should immediately be taken.

"The access to drinkable water is the major issue of Tharparkar," said the executive director of the Association for Water Applied Education and Renewable Energy (AWARE), a non-governmental organization, Ali Akbar Rahimoon. He criticized the lack of a drinkable water policy, saying that the federal government had made the first such policy in September 2009. "Sindh has not made a policy yet."

Another social activist and writer, Bharo Amrani, said that a separate water policy is required for Tharparkar. "The major issue of Thar is water and all major sources of earning depend upon water."

Environmentalist Nasir Ali Panhwar said that per capita water availability in Pakistan has reduced from 5,650 cubic meter per person in 1951 to current 1,000 cubic meter per person. He said that 60 per cent of infant deaths are caused by waterborne infections. Panwhar added that 250,000 children die each year in Pakistan because of waterborne diseases, referring to USAID data, and that stagnant dirty water, both in rural and urban areas, account for a large number of deaths caused by fatal diseases like cholera, malaria, dysentery and typhoid. According to WHO reports, 25 to 30 per cent of hospital admissions in Pakistan are connected to waterborne and bacterial parasite diseases.

In Sindh alone, the people of Naro, district Khairpur, Achhro Thar of district Sanghar, Badin, Thatta, Jamshoro and Dadu also use underground water without prior testing, to name a few. If the water is salty, they believe they won't need additional salt in their foods.

The coastal regions of Sindh are more vulnerable. "I have to purchase water though I stay on the bank of the river," said Mai Hoor who lives near Keti Bunder.

The water supply schemes and filtration projects in rural areas of Sindh are missing. "I have heard that the water available in our village is contaminated but we have to consume it; there is no other option," said Ibrahim Pali of Seerani, a small town of Badin. Being one of the aged persons of the area, Pali believed that most diseases in his area increased when the taste of water changed.

"The entire population of Thatta city is being provided contaminated water," said Imam Dino from Thatta. "Industrial waste is being released in the main supply canal from Jamshoro to Karachi."

"The gutters and water lines go together not only in Johi but across the province," Aslam Khushak, a resident of Dadu commented. "You say water is life but it is death actually in Sindh. Not blood but toxic water runs in our veins."

"World water day 2014: When water is death", 22/03/2014, online at: http://tribune.com.pk/story/685806/world-water-day-2014-when-water-is-death/

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❖ New wars to be fought on water: Imran

CHAIRMAN Pakistan Tehreek-e-Insaaf Imran Khan has said the next wars in the world are going to be fought on water, not on the oil.

He also said the government was negligent of the water shortage and water quality which was causing deaths in children all over Pakistan besides demanding it should make a water policy that addressed crises in water scarcity and water conservation.

The PTI Chairman stated this while addressing a seminar held in connection with the Water Day through video link. The seminar was conducted by the PTI water committee on the occasion of the international water day. The PTI leaders spoke on the need of an integrated water policy which took into account the water crises prevailing in Pakistan. Besides, two water experts Dr. MS Shafiq, speaking on the occasion, said Pakistan was blessed with water but was cursed with lack of governance in water management. He said that each government had shown no will to build dams and reservoirs on the right time with the result that Pakistan had become from being water stressed to water scarce country.

Mian Mehmood-ur-Rasheed, Opposition Leader of the PTI, said the PML-N government was engaged in wasting million of rupees in youth festival for making records of number of people who were hitting their heads against walnuts while Pakistan was breaking all records of poor and higher number of children dying from the contaminated water. He said the PTI would carry out a movement against water crises in the assembly and also come on streets to prevent this issue from becoming a disaster.

PTI Punjab President Ejaz Chaudhry said that all civilisations in the history developed and grown where water was found and Pakistan being Indus civilisation had seen the Indus River dried due to the negligence of government at every level. He said that when water dried, people died and that was what was happening in Thar and Cholistan.

PTI General Secretary Dr Yasmin Rashid said that 25000 and 30000 children died due to waterborn diseases like diarrhea, hepatitis and polio. She said that water was a basic human right and it was shameful for the government that in Pakistan very soon water shedding would start just like loadshedding if any action would not be taken.

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PTI Secretary Information Andleeb Abbas said the PTI would be running a household water conservation awareness plan where 1000 of gallons of waters which were wasted in every house by not checking leakage in taps, washing cars in the house with pipes and watering lawns with drinkable water. She said that by running these awareness campaigns each household could save 1000000 gallons of water per year thus contributing to the overall water conservation of the country.

PTI MPA Mian Aslam Iqbal said the PTI would be raising voice against the water issues in the assembly and would be forcing the government to include the water awareness in the education textbooks.

MPA Shanila Rout, MPA Dr. Nosheen Hamid, MPA Sadia Sohail, MPA Raheela Mehdi, Aleem Khan, Javed Niaz Manj, Ch Ishfaq, Mian Iftikhar, Rana Sajid Shokat, Usman Saeed Basra, Sobia Kamal, Sadia Saif, Shehzadi Aurangzeb, Dr. Farooq Tahir, Aliya Hamza Malik, Hussain Jafferi, Mudasser Ahmed, Amir Gujjar, Rana Imtiaz Ali Khan, Mehar Fayaz, Mehmood Joiya, Waqas Iftikhar, Gulrez Iqbal, Ishtiaq Ahmed, Naveed Ansari, Farhan Chishti, Luqman Qazi, Adnan Jamil and other office-bearers were also present.

"New wars to be fought on water: Imran", 23/03/2014, online at: http://www.thenews.com.pk/Todays-News-5-239750-New-wars-to-be-fought-on-water:-Imran

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❖ Why water could decide the Indian elections

India is the world's second largest country by population (1.2 billion) and tenth largest by GDP ($1,842bn), yet the national election next monthcould be decided by a simple issue – water.

Mechanically pumped groundwater now provides 85% of India's drinking water, and is the main water source for all uses. North India's groundwater is declining at one of the fastest rates in the world, and many areas may have already passed "peak water". The World Bank predicted earlier this year that a majority of India's underground water resources will reach a critical state within 20 years. Groundwater use still falls under an 1882 colonial law, but the reasons behind its dramatic decline are more to do with the local and international politics of water management.

New Delhi has an average water supply – 273 litres per person per day – which is higher than London and Paris, but simply accessing water is a daily challenge for about 50% of residents. As the city water board struggles, Delhi's thirsty population depends on the "water mafia", said to control a trade worth billions of dollars that is essential for ordinary people, wealthy residents and elected politicians alike. Just as onion prices rise before an election, tensions over water run high, increasing general anti-incumbency bias and voter loyalty towards those able to deliver on promises of good supply. The brokerage chains used in Indian cities to arrange water access can both support existing political regimes and lead to resentment against them.

Until now, the 2014 elections have been shaping up to be a head-to-head battle between leaders of the two main parties: Narendra Modi's hi-tech hindutva for the BJP, against Rahul Gandhi, scion of the Nehru dynasty, for the somewhat tarnished Congress. The dark horse in the national campaigning, though, is India's newest political party the Aam Aadmi (AAP) led by an unlikely frontman, former civil servant and water activist Arvind Kejriwal.

The AAP won a surprise victory in the recent Delhi elections on the back of a campaign centred on corruption and basic services. Their manifestodescribing water as "the biggest concern of the aam aadmi [common man] in Delhi" made it a key campaign issue. Their posters read: "A warning to power: no water, so no vote".

Despite accusations of being a middle-class party, AAP in fact attracted a lot of votes from Delhi's poorer neighbourhoods. For areas without good water access, water may be "arranged" by local leaders, usually aligned to the two main parties, in return for local support. Perceived withdrawal of loyalty may be met with threats, harassment or violence. By framing corruption around these issues

of access to basic services, AAP has seemingly found a deep well of support. However, the day after AAP came into government, neighbourhoods in south Delhi found their water cut off, apparently a water mafia response to AAP's policy of free basic water. Kejriwal refused extra security and the AAP's efforts against illicit water continue.

Lack of adequate water and sanitation are significant impediments to social and economic development in India. Sickness from polluted water is frequent. Girls in unserviced areas often skip school waiting in line on "water day", or don't sleep as they wait for the water to come on in the night. Indian bathrooms, for those lucky enough to have them, are commonly fitted with two sets of taps. One is for municipal water that runs at very low pressure at sporadic intervals (perhaps a couple of hours twice a day in Delhi's better areas), if at all. The other set is for alternative water, supplied from groundwater pumped from below the building, or sumps filled by delivery tankers, also often using untreated groundwater.

As groundwater declines, and climate change kicks in, control over water is a source of power. In the land of khaadi kurta-clad politicians, Kejriwal has become famous for his signature combination of "old uncle" sweater,"borrowed watchman's" muffler and the Nehru hat that has become the party's symbol. But the AAP is not all spin. As a political party it grew out of the India Against Corruption movement, the country's Arab Spring, and is bringing an activist mentality into electoral politics. While this has sometimes spilled over into the ugly side of populism, the AAP has shown a shrewd ability to draw support from the urban middle class and poor alike.

After Kejriwal recently stepped down as Delhi chief minister, citing obstruction from the mainstream parties, the AAP started preparing for a national campaign. Fielding candidates from an impressive coalition of campaigners and social activists, including veteran environmentalist Medha Patkar, AAP has the potential to play spoiler or kingmaker in the upcoming elections.

If AAP is to succeed they need more than grassroots campaigning and popular discontent. Policies and schemes for water resource development in India have not recognised the political, social and economic roles of water outside of the official system. As a result, they have been bound to fail. The expensive, technology-heavy model of water supply that is often promoted mainly benefits international companies, consultants and local elites, destroying traditional, sustainable water practices in the process. AAP has made a promising start in tackling these problems in Delhi. They

will need to continue to address these issues if they are to balance electoral populism with their promises of social justice.

"Why water could decide the Indian elections", 22/03/2014, online at: http://www.theguardian.com/commentisfree/2014/mar/22/water-decide-indian-elections-aam-admi

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❖ World faces 'water-energy' crisis – UN

PARIS - Surging populations and economies in the developing world will cause a double crunch in demand for water and energy in the coming decades, the UN said Friday.

In a report published on the eve of World Water Day, it said the cravings for clean water and electricity were intertwined and could badly strain Earth's limited resources.

"Demand for freshwater and energy will continue to increase over the coming decades to meet the needs of growing populations and economies, changing lifestyles and evolving consumption patterns, greatly amplifying existing pressures on limited natural resources and on ecosystems," the report said.

Already, 768 million people do not have access to a safe, reliable source of water, 2.5 billion do not have decent sanitation and more than 1.3 billion do not have mains electricity.

About 20 percent of the world's aquifers today are depleted, according to the report.

Agriculture accounts for more than two-thirds of water use.

The World Water Development Report, the fifth in the series by the UN Educational, Scientific and Cultural Organization (UNESCO), is an overview collated from data from scientific studies and investigations by agencies.

It said ever more freshwater will be needed for farming, construction, drinking, cooking, washing and sewerage, but also for energy production – 90 percent of which uses water-intensive techniques today.

The report gave this snapshot of the future:

- Global water demand is likely to increase by 55 percent by 2050.

- By then, more than 40 percent of the world's population will be living in areas of "severe" water stress, many of them in the broad swathe of land from North Africa and the Middle East to western South Asia.
- Asia will be the biggest hotspot for bust-ups over water extraction, where water sources straddle national borders. "Areas of conflict include the Aral Sea and the Ganges-Brahmaputra River, Indus River and Mekong River basins," said the report.
- Global energy demand is expected to grow by more than a third by 2035, with China, India and Middle Eastern countries accounting for 60 percent of the increase.
- In 2010, energy production gobbled up 66 billion cubic meters (2,300 billion cu. feet) of fresh water -- more than the average annual flow of the River Nile in Egypt.

By 2035, this consumption could rise by 85 percent, driven by power plant cooling systems that work with water.

Thirsty energy

Shale deposits and tar sands, driving an energy boom in North America, are especially hefty in their demands for water to force out the precious gas and oil, the report said.

Even so, "they are outstripped by far by biofuels," said researcher Richard Connor, who headed the study.

Renewable sources like solar and wind energy that use far less water are gaining ground, and accounted for about a fifth of global electricity output in 2011, the report said.

But they are unlikely to expand this share significantly if fossil fuels continue receiving the bulk of subsidies, it said.

Oil, gas and coal had subsidies of $523 billion (376 billion euros) in 2011, nearly 30 percent more than in 2010, compared to $88 billion for renewables, the report said, citing International Energy Agency (IEA) figures.

Africa, Latin America and the Caribbean have plenty of potential for hydro-energy, which reuses the precious resource, it added.

Hydro-electric dams have been extremely controversial. Big projects deliver gigawatts of power but critics say they are ecologically damaging and prone to massive cost overruns.

The review called for a global effort in efficiency gains, pointing the finger at the arid countries of the Middle East where between 15 and 60 percent of water is wasted through leaks or evaporation even before the consumer opens the tap.

The report also called for smart choices in allocating the trillions of dollars likely to be invested in water and energy infrastructure over the next two decades.

"World faces 'water-energy' crisis – UN", 21/03/2014, online at:
http://www.gmanetwork.com/news/story/353509/news/world/world-faces-water-energy-crisis-un

❖ UN World Water Day lays stress on need for conservation

The UAE is the world's third highest consumer of water in the world, per capita, despite projections the groundwater supply in Liwa could disappear in 40 years.

You could be paying for hundreds of litres of water each year that you are not even using.

Saturday's UN World Water Day put the spotlight once again on profligate use of a finite resource, as countries around the world – particularly in the desert environment of the Middle East – face critical water shortages.

The UAE is the world's third highest consumer of water in the world, per capita, despite projections the groundwater supply in Liwa could disappear in 40 years.

But saving the environment is not the only reason for residents to ease off water consumption, according to Dubai Electricity and Water Authority (Dewa), Electricity and Water Conservation senior officer Ali Amjad.

He pointed out leaking taps or loss of water through mechanisms like hose pipes could add up over the course of a month.

"Hundred and fifty litres (could be) going down the drain without you even being aware of it, without you consuming it and at the end of the month you have to pay for it."

Through simple techniques like adjusting water pressure, using water efficient taps, using toilets with partial flushes, cutting showers down by a minute, and investing in appliances with water conserving-technology, big savings could be made, he said.

"It's basically these points that people are unaware of."

Amjad delivered his message to about 50 Villa Rotana staff on Saturday, as part of the Dubai hotel's education and awareness efforts. After the presentations, staff delivered 1,000 bottles of water to labourers.

Amjad finished his presentation by quoting His Highness Shaikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, who has acknowledged the importance of water conservation.

"We recognise that preserving our energy resources will be one of the greatest challenges in our drive towards sustainable development. This, however, will not materialise unless the different facets of our society adopt energy conservation principles in their core values."

Villa Rotana Environment, Health and Safety manager Jawad Ali's presentation quoted concerns about the amount of water each person needed per day – between 20 and 50 litres – and the growing population, anticipated to be 9 billion by 2050.

He said since water was used heavily in food production "food wastage is also water wastage."

He urged the workers to take simple steps, such as closing taps when brushing teeth and washing hair, which could save hundreds of gallons each month. "You are using water because you're not going to pay, but you need to think at the end of the day it's (wastage)."

Villa Rotana worker Aireen Tampus said she had not realised how much water was used through simple household tasks before.

"(The presentation) has really helped us learn about how to conserve water, especially in the staff accommodation."

Meanwhile, Pakistani water solutions company Pak Oasis, which has an office in Dubai, held a session on the importance of water in poverty alleviation at the Burj Khalifa.

International Trade Manager at Pak Oasis David James said access to clean, drinkable water was an internationally-recognised fundamental human right.

Water was essential not only for health and food security, but also for encouraging girls into education. He said in Pakistan almost half of all girls dropped out of school by Grade 3, partially as a result of a lack of toilets.

"You're not going to be able to eradicate hunger, you're not going to be able to provide education, you're not going to be able to provide gender equality (without clean water)."

"UN World Water Day lays stress on need for conservation", 23/03/2014, online at: http://www.khaleejtimes.com/kt-article-display-1.asp?xfile=data/nationgeneral/2014/March/nationgeneral_March147.xml&section=nationgeneral

❖ Water Wars: Fighting Over Earth's Most Precious Fluid

With global water use growing at more than twice the rate of human population increase in the last century, the issue of water security is quickly rising to the top. When it comes to life's most precious fluid, mankind has two very different choices: conflict or cooperation

(3BL Media/Justmeans) -- The first recorded water war occurred more than 4,500 years ago in modern-day Iraq, near the confluence of the Tigris and Euphrates rivers. Fought between the neighboring ancient city-states of Lagash and Umma over the region known then as "Gu'edena" ("edge of paradise"), the conflict started when the king of Lagash diverted water to canals, depriving Umma from a fresh water supply. This ancient "resource war" is one of the earliest known organized battles in history.

Throughout history, the Tigris-Euphrates river basin—a lush region known as the "Fertile Crescent" that helped Mesopotamia become the central power of the ancient world—has been the site of numerous violent, water-based conflicts. In 1720 BC, a grandson of Hammurabi erected a dam on the Tigris to prevent the retreat of rebels calling for Babylon's independence. In 355 BC, Alexander the Great destroyed the defensive weirs built by the Persians to block navigation. In 1991, during the Persian Gulf War, Allied Coalition forces destroyed Baghdad's water pumping stations. These are just a few examples. (The Pacific Institute has created an excellent "Water Conflict Chronology List," starting with the Sumerian myth that parallels the Biblical account of Noah and the Great Flood, up to a recent violent conflict between rival Indonesian villages over water access.)

Water scarcity and violent conflict

Today, the people who depend on the Tigris-Euphrates river system—residents of Turkey, Syria, Iraq, Iran and Kuwait—are still at loggerheads over their shared water resource. "No river system better demonstrates the nature of hydrological interdependence," argue Kevin Watkins, an expert on human development and globalization, and Anders Berntell, the executive director of the International Water Institute (SIWI), in an op-ed that sharply draws the connection between water scarcity and violent inter-state conflict.{1}

What makes the situation more worrisome is the fact that the Tigris-Euphrates river basin is losing fresh water at an astonishing rate due to human consumption for drinking and agriculture. Researchers from University of California at Irvine, Georgetown University and NASA, using data gathered by the twin gravity-measuring satellites of the Gravity Recovery and Climate Experiment (GRACE), found that 117 million acre feet (144 cubic kilometers) of fresh water was lost from 2003 to 2009.

"GRACE data show an alarming rate of decrease in total water storage in the Tigris and Euphrates river basins, which currently have the second fastest rate of groundwater storage loss on Earth, after India," said Jay Famiglietti, the lead investigator of the study, which estimates that majority of the loss is due to groundwater being pumped out faster than natural processes can replace it. "The rate was especially striking after the 2007 drought. Meanwhile, demand for freshwater continues to rise, and the region does not coordinate its water management because of different interpretations of international laws."{2}

This lack of coordination is also rooted in a longstanding competition between the nations that depend on this fresh water for energy, agriculture and human consumption. "In Turkey, the Tigris and Euphrates rivers are seen as an underexploited source of power and irrigation," write Watkins and Berntell. "Viewed from Syria and Iraq, Turkish dams are a threat to hundreds of thousands of livelihoods, with farmers losing access to water. Underpinning the rivalry between states is the idea that sharing water is a zero-sum game: Every drop of water secured by Turkish farmers appears as a loss to Syrian farmers."{3}

Regional problems with global effect

While the Tigris-Euphrates may be the best illustration of hydrological interdependence, recent and ongoing transboundary impacts at many of the world's river systems threaten to destabilize several regions around the globe, many of which are already politically volatile. In 2006, Israel bombed irrigation canals that supplied water from the Litani River to 10,000 acres of farmland in Lebanon. Israel has leveraged its control of two key freshwater sources for Jordan and Palestine: Golan Heights, which supplies the Jordan River watershed, and the West Bank, which has three underground aquifers. In fact, the fight over the water of the Jordan River was one of the causes of the 1967 Six-Day War between Israel and the Arab states of Egypt, Iraq, Jordan and Syria. "Forget

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oil: The most precious resource in the region flows in the River Jordan," argue Watkins and Berntell, noting that the region, where more than 90 percent of usable water travels across international borders, is "the world's most severely water-stressed."{4} Recently, Egypt has made military threats in response to Ethiopia's construction of a dam on the Blue Nile, recalling Egyptian President Anwar Sadat's famous declaration in 1979: "The only matter that could take Egypt to war again is water." Egypt is one of only three nations in the Middle East region that have abundant fresh water, along with Iran and Turkey. Around two-thirds of the Arab world rely on external sources for their water supply.{5}

Looking eastward, India has not welcomed China's construction of dams along the Yarlung Zangbo River in western Tibet, which flows to the Indian subcontinent. Indian feathers were also ruffled when Chinese engineers suggested that they could divert the course of the Brahmaputra, one of Asia's most important rivers, which flows into the Ganges from southern Tibet, by using a "peaceful nuclear explosion." French journalist and Tibetan expert Claude Arpi suggests that this scenario is one of the reasons that China has not ratified the Comprehensive Test Ban Treaty (CTBT).{6} In sub-Saharan Africa, the genocide in Rwanda, which is economically dependent on water for irrigating coffee crops, has its genesis in water conflict. In the ongoing Sudanese War in Darfur, the Sudanese military and Janjaweed militias have focused attacks on water supplies to displace non-Arab inhabitants; in 2007, it was suggested that the discovery of a huge underground lake in Darfur could be key in ending the war by eliminating water competition. From the Middle East to Africa, from the Indian subcontinent to Asia, it is clear that many states are willing to go to extremes not only to protect their water security, but also to use water as a military weapon.

In March 2012, the U.S. National Intelligence Council released a report, "Intelligence Community Assessment on Global Water Security," which identified North Africa, the Middle East and South Asia as key regions that will face "major challenges coping with water problems."{7} Drafted by the U.S. Defense Intelligence Agency, the report was designed to answer one question: How will water problems impact U.S. national security interests over the next 30 years? Its bottom line is a stark warning for American interests that has received barely any coverage by the major news media:

"During the next 10 years, many countries important to the United States will experience water problems—shortages, poor water quality, or floods—that will risk instability and state failure,

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increase regional tensions, and distract them from working with the United States on important US policy objectives. Between now and 2040, fresh water availability will not keep up with demand absent more effective management of water resources. Water problems will hinder the ability of key countries to produce food and generate energy, posing a risk to global food markets and hobbling economic growth. As a result of demographic and economic development pressures, North Africa, the Middle East, and South Asia will face major challenges coping with water problems."{8}

Managing a finite resource for an exploding population

The Earth is a closed system. All the water on the planet—in the oceans, seas, lakes, rivers and even the snow and rain—is all the water there ever was or ever will be.{9} A tiny 2.5 percent of the Earth's water is fresh water, just 0.4 percent of which occurs on the surface, in the forms of freshwater lakes, rivers and moisture in the atmosphere. (Most surface fresh water is locked up in glaciers.) Considering the skyrocketing human population—a staggering 9.6 billion people by 2050, compared to just 3 billion people as recently as 1960—managing a finite water supply is a difficult and complex task. "By 2050, the demand for water could approach 100 percent of the available supply, producing intense competition for this essential substance in all but a few well-watered areas of the planet," writes Michael T. Klare, author of Resource Wars: The New Landscape of Global Conflict.{10} Moreover, we cannot forget that humans aren't the only species that rely on water: Every single living thing must have it to survive. And while water is generally not a primary concern for most people living in the West, where accessing clean water simply means turning on a faucet, the same is not true in the developing world.{11}

Around 1.2 billion people, almost a fifth of the world's population, live where water is scarce, with an additional 500 million approaching similar circumstances. And another 1.6 billion people, almost a quarter of the world's population, live in parts of the world with ample groundwater, but no infrastructure to move it from rivers and aquifers.{12} The United Nations offers a stark prediction: "By 2025, 1800 million people will be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under stress conditions."{13} Worldwide, one out of every five deaths of children under five years of age is due to a water-related disease.{14}

By 2050, fresh water availability in the Middle East and North Africa will drop by 50 percent.{15} In sub-Saharan Africa, where droughts are frequent and severe, water scarcity is a defining

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characteristic of daily life: Two out of three people there do not have access to a toilet. The region has the lowest percentage of sanitation coverage in the world and the highest concentration of water-stressed countries.{16}{17} Of the world's population without access to clean and safe water, 37 percent live in sub-Saharan Africa.{18} Managing the world's finite water supply and addressing declining access to clean water (not even to mention the steadily increasing demand on critical commodities like iron, copper and a host of precious metals) must be top-level societal concerns, not just in water-stressed regions, but also in the West.

Cooperation or conflict?

Watkins and Berntell ask an important question: "Are we heading for an era of 'hydrological warfare' in which rivers, lakes and aquifers become national security assets to be fought over, or controlled through proxy armies and client states? Or can water act as a force for peace and cooperation?"{19} Looking at the history of water conflicts around the world, the future may look grim. But the National Intelligence Council believes otherwise, stating in their report that "a water-related state-on-state conflict is unlikely during the next 10 years." Moreover, these water stresses may in fact lead to cooperation, not conflict. The Council points out: "Historically, water tensions have led to more water-sharing agreements than violent conflicts." But looking beyond 10 years, as "water shortages become more acute," their assessment turns into a grave warning: "Water in shared basins will increasingly be used as leverage; the use of water as a weapon to further terrorist objectives will also become more likely."{20}

The current facts on the ground are staggering. But there are solutions. "There is enough freshwater on the planet for seven billion people," notes the United Nations, "but it is distributed unevenly and too much of it is wasted, polluted and unsustainably managed."{21} The world's leading program to help stakeholders navigate water issues and prevent water conflict is the joint UNESCO–Green Cross International project entitled "From Potential Conflict to Cooperation Potential" (PCCP), launched in 2006 as part of the UN initiative to promote 21st-century water security around the world. Several interstate treaties have proved successful. Cambodia, Laos, Thailand and Vietnam, for example, have been working on their shared water security since 1957 within the framework of the Mekong River Commission. The World Bank-brokered Indus Waters Treaty, a water-sharing agreement between India and Pakistan, survived the three Indo-Pakistani Wars. In 1999, Egypt, Sudan, Ethiopia, Uganda,

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Kenya, Tanzania, Burundi, Rwanda and the Democratic Republic of Congo signed the Nile Basin Initiative to cooperate on their shared water resource.

"The more than 3,600 agreements and treaties signed are an achievement in themselves," acknowledges the UN, but quick to point out that "a closer look at them still reveals significant weaknesses."{22} And with current tensions of water simmering across the globe, cooperation is far from guaranteed. In addition, even if cooperation wins the day, growing water scarcity will have an impact both on quality of life as well as economics—not just in terms of water privatization, but across the multitude of water-intensive industries, such as agriculture, food manufacturing and energy utilities. "At minimum, acute resource scarcity will lead the world into a period when the average prices for commodities—arable land, water, minerals, and oil—will skyrocket to permanently higher levels…[a]nd higher prices will, inevitably, lead to worsening living standards across the world," argues economist Dambisa Moyo in her book Winner Take All: China's Race for Resources and What It Means for the World.{23}

Watkins and Berntell offer a broad four-part solution: 1) governments must improve internal water policies that support efficiency and conservation; 2) countries must not act unilaterally and negotiate such things as river alterations and shared groundwater usage; 3) governments must establish intergovernmental river-basin institutions to identify and exploit opportunities for cooperation, including more involvement and aid from donor countries (the European Union in particular, can play an important role due to its success in building institutions that manage rivers like the Danube and the Rhine); and 4) political leaders must get involved in conversations that are "dominated by technical experts" in which "the absence of political leadership tends to limit the scope for far-reaching cooperation."{24}

These are excellent recommendations, as is the United Nations call for the addition to all the water treaties of "monitoring provisions, enforcement mechanisms, and specific water allocation provisions that address variations in water flow and changing needs."{25} But will governments follow these recommendations? Looking at the history and future possibility of water conflict brings up an even more fundamental question: Are humans essentially competitive or cooperative? One thing is for certain: At the rate that we are depleting the Earth's finite resources, we will soon find out.

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❖ Countries are more likely to cooperate on water – NASA

NEW YORK, March 21 (KUNA) -- On the eve of the United Nations' World Water Day celebrated annually on March 22nd, divided attitudes toward the event point this year to broader disagreements over the role water will play in world security.

While some scientists and experts express hope that countries that share aquifers and rivers will cooperate to share the water rather than fight over it, the UN and other analysts are concerned that water scarcity in some parts of the world, including the Middle East, has already stoked tensions between neighbors.

"Where there are aquifers and rivers that cross political boundaries, water can be grounds for conflict. However, what we have seen so far in many parts of the world is that countries are more likely to work together to solve water scarcity issues than to fight over water. Let's hope that trend continues," Dr. Matthew Rodell, Chief, Hydrological Sciences Laboratory, at The National Aeronautics and Space Administration (NASA) Goddard Space Flight Center, said in an interview with Kuwait News Agency (KUNA).

He explained that surface waters, such as lakes, streams, and rivers, are continually replenished, although their water can be over-allocated, and it is subject to inter-annual variability of precipitation. Groundwater, on the other hand, he added, is often thousands of years old in arid regions, meaning that the aquifers filled thousands of years ago when the climate was different, and they are no longer replenished by precipitation.

"When people use this 'fossil' groundwater, it is like drawing down one's savings account without ever making a new deposit," he said, adding that in the Middle East, many of the aquifers are fossil aquifers, or at least they recharge very slowly, hence the scarcity of water. "What we have seen is that during droughts, people tend to use more groundwater because there is less surface water available, which causes groundwater levels to decline rapidly. Unfortunately, they do not recover when wet weather returns," he explained.

"If people become overly reliant on groundwater in the Middle East, wells will begin to go dry and in some places the water quality will deteriorate. Thus it is very serious if the groundwater is not sustainably managed," he warned.

Asked if science can offer a solution, Dr. Rodell said science "can tell us how fast the water is being depleted, and possibly what would be a sustainable rate of consumption, and possibly how much water there is in the aquifers. If that science information is used wisely by policymakers and program managers, then indeed, science can be used to help avoid a crisis." On World Water Day, the UN is scheduled to release on Saturday in Japan a report entitled 'Water and Energy' because water and energy are closely interconnected and highly interdependent, with actions taken in one can greatly affect the other, positively or negatively. The report, the first of its kind, addresses inequities, especially for the 'bottom billion' who live in slums and impoverished rural areas where inhabitants can hardly survive without access to safe drinking water and adequate sanitation. Observing the Day, Secretary-General Ban Ki-moon is expected to say in a message "Let us pledge to develop the policies needed to ensure that sustainable water and energy are secured for the many and not just the few." "The many strong links between water and energy demand coherent, integrated policies and innovative strategies. Water must be used - and electricity must be generated and distributed - equitably and efficiently, so all users get a fair share," he is expected to add in his message.

-- The UN estimates that 783 million people live without clean water worldwide, and in the Middle East, it expects fresh water to diminish by 50 percent by the year 2050. NASA recent satellite images revealed that the world's water supply is depleting fast. Studies explain that it is mainly due to the growing population, over-pumping of aquifers, agricultural demand and climate change. Some even noted that wars over water have increased lately and more are yet to come. Politicians and Scientists predict that the future wars will not be over oil, but rather over water. The Crown Prince of the United Arab Emirates Sheikh Mohammed Bin Zayed Al-Nahyan was quoted recently as telling the international Water Conference in Abu Dhabi that "for us, water in now more important than oil." Water scarcity faces almost every single Arab country. Some Arab countries, mainly Gulf States, import food or lease farm land in far away countries, like in Australia, to develop agriculture.

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The water scarcity is specifically acute in Palestine whose natural resources, including water, are being, not only depleted naturally, but also "stolen" by occupying Israel that controls most of Palestine's water resources, in violation of the 1995 Oslo Agreement, said Palestinian experts. And 19 years later, water supplies in the West Bank and Gaza are still far less than what Israel enjoys. UN officials warn that the Israeli-Palestinian conflict will remain hostage to 65 years of mistrust, with the peace process unlikely to go anywhere, any time soon. Palestinian representative Rabii Al Hantouli told a UN panel in late 2013 that the Palestinian economy is deprived of access to 82 percent of its groundwater, adding that Israel currently exploits more that 90 percent of Palestinian water resources for exclusive Israeli use, including for use in Israeli settlements.

As a result, he noted, the average water consumption in the occupied territory is 70 liters per person per day, which is below the minimum level of 100 liters recommended by the World Health Organisation (WHO), and is much less than the average 300 liters consumed in Israel. His complaints are echoed by the Center for Research on Globalisation, a Canadian-based bureau. Israel controls most of the renewable water resources estimated at 750 million cubic meters (MCM), restricts access to water resources for Palestinians, and prevents them from drilling new water wells. Israeli settlements receive 75 MCM of water, 44 MCM of which come from Israeli-controlled wells in the West Bank where water consumption by Israeli settlers is four times higher than that of Palestinians. While Palestine accuses Israel of stealing its water, Israel accuses Palestine of wasteful irrigation methods.

Experts argue that Israel and its Arab neighbours all face the same water scarcity and desertification problems, but Israel managed to avoid such problems and can even help its neighbours avoid them too. If they all cooperate on this, regional tensions among them can be eased. Danielle Nierenberg, President of Food Tank, a food think tank, expressed regret that "irrigation is the source of excessive water depletion from aquifers, and can cause erosion and soil degradation," adding that using rainwater harvesting practices, micro-irrigation, rotational grazing systems, and other water-saving practices can help create diverse landscapes. She said the Rome-based Food and Agriculture Organisation (FAO), for instance, helped the Agriculture Ministries in some Arab countries improve irrigation technology and management

techniques. The project, she added, benefited tens of thousands of farmers by providing drip irrigation systems which save water and fertilizer inputs by allowing water to drip slowly through a network of tubing to the roots of the plants. The World Bank managed late last year to have Israel, Jordan and the Palestinians sign a milestone regional cooperation agreement that will support the management of scarce water resources and the joint development and use of new water resources through sea water desalination.

The Palestinian Electronic intifada criticized the agreement last February on its website, saying the project "allegedly saves the Dead Sea and proves that peace is possible through cooperation to manage natural resources." But, it added, the truth is that "the scheme only threatens to make an already disastrous situation worse, as well as robbing Palestinians of their right to water." The Arab region also faces an escalation over water between Egypt and Ethiopia over the Grand Ethiopian Renaissance Dam. Ethiopia is building a 6, 000-megawatt hydroelectric dam on the Blue Nile, which can reduce the water flow to Egypt by 20 percent. According to National Geographic, Egypt insists Ethiopia's hydroelectric scheme amounts to a violation of its historic rights, a breach of the 1959 colonial-era agreement that allocated almost three-fourths of the Nile waters to Egypt, and an existential threat to a country largely devoid of alternative freshwater sources. Aware of the magnitude of water scarcity in the Middle East, FAO also discussed during its regional Conference last month a new initiative to identify the problems and come up with solutions. The participants offered guidance on priority areas for actions, giving more voice to farmers and boosting efficiency in water use, both within and across national borders. The pilot phase of the initiative involves Egypt, Jordan, Morocco, Oman, Tunisia and Yemen.

"Countries are more likely to cooperate on water – NASA", 21/03/2014, online at:
http://www.kuna.net.kw/ArticleDetails.aspx?id=2367730&language=en

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❖ Water and energy might be more connected than you think

Any views expressed in this article are those of the author and not of Thomson Reuters Foundation.

If there's one message that the United Nations wants to drive home this World Water Day, it's this: Water requires energy, and energy requires water.

It's called the energy-water nexus, and it's the focus of this year's**World Water Day**, a United Nations-designated day focused on raising water awareness and promoting positive water policy. The energy-water nexus emphasizes the interdependence of water and energy.

On one hand, water is crucial to produce energy – it's heated through solar arrays, employed to produce fuels such as coal and oil, and massive water resources are needed to cool nuclear power systems. Overall, about 90 percent of power generation is water-intensive.

On the other hand, a surprising amount of energy is consumed just to pump, treat and transport water – about 8 percent of global energy production, in fact. Energy is needed to irrigate fields, to truck clean water to places that need it, and it's necessary to process wastewater before it is discharged back into the environment.

With already increasing pressure on limited water resources, a demand for nontraditional water-intensive energy sources could further threaten this fragile balance. For example, unconventional oil and gas production (such as tar sands and fracking) are more water-intensive than conventional means.

At the same time, the rate of groundwater abstraction – removing water from its source – is increasing 1 to 2 percent per year, and an estimated 20 percent of the world's aquifers are already over-exploited. By 2035, the world's energy consumption will increase by 35 percent. This will raise water consumption by 85 percent, says the International Energy Agency.

As the World Bank reported, water shortages in 2013 shut down thermal power plants in India, drove down energy production in United States power plants and threatened hydropower in Sri Lanka, China and Brazil.

"The world's energy and water are inextricably linked," said Rachel Kyte, World Bank Group Vice President and Special Envoy for Climate Change. "With demand rising for both resources and increasing challenges from climate change, water scarcity can threaten the long-term viability of energy projects and hinder development."

Therefore, securing water and energy must be central in the development of Sustainable Development Goals (SDGs) – development objectives set to build upon the 2015-targeted Millennium Development Goals.

As the UN highlights, "the challenge for 21st century governance is to take account of the multiple aspects, roles and benefits of water, and to place water at the heart of decision-making for all water-dependent sectors, including energy."

March 22 is World Water Day – remember this: Saving energy is saving water; saving water is saving energy.

"Water and energy might be more connected than you think", 21/03/2014, online at: http://www.trust.org/item/20140321180754-02owr/?source=hppartner

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❖ Historic "Pulse Flow" Brings Water to Parched Colorado River Delta

Thanks to a landmark agreement between the United States and Mexico, the parched Colorado River Delta will get a rejuvenating shot of water this spring for one of the first times in five decades, just in time for World Water Day on March 22.

On March 23, 2014, the gates of Morelos Dam on the Arizona-Mexico border will be lifted to allow a "pulse flow" of water into the final stretch of the Colorado River. Officials and scientists hope the water will help restore a landscape that has long been arid but that once supported a rich diversity of life.

"The pulse flow is about mimicking the way the Colorado River flowed in the springtime, thanks to snowmelt from the Rocky Mountains, before all the dams were built," says Sandra Postel, director of the Global Water Policy Project and a National Geographic Freshwater Fellow. By the early 1960s, dams on the Colorado, such as Glen Canyon and the Hoover Dam, had diverted so much water that there was precious little flow entering the lower Colorado.

Water that did make it to Morelos Dam was diverted into Mexico's Mexicali Valley for crop irrigation, leaving little for the wildlife or indigenous people living in the delta.

Water for the pulse flow is being released from Lake Mead behind Hoover Dam at an unspecified time. It will take a few days to travel some 320 river miles (515 kilometers) to the Morelos Dam. On March 23, the gates of Morelos Dam will be opened by the International Boundary and Water Commission, which operates the structure. That will allow the pulse flow to enter the last 70 miles (113 kilometers) of the Colorado River. Peak flow through the gates is expected around March 27, and then the flow will taper to a lower volume for about eight weeks.

As agreed upon by the U.S. and Mexico, the total amount of flow over the period will be 105,392 acre-feet of water (130 million cubic meters). That represent less than one percent of the pre-dam annual flow through the Colorado, "but in terms of recent flows it is very significant," says Postel.

The outcome of the pulse flow remains somewhat unpredictable. Groundwater "sinks" along the route will trap an unknown amount of the water, and debris could block part of the flow or cause it to reroute. "There's a lot of uncertainty because this is an experiment that hasn't been done before," says Postel. (See "The American Nile.")

If the flow reaches the Sea of Cortez (Gulf of California), as scientists hope, it should happen in about two weeks. Except for a few short periods of heavy precipitation (most recently in the 1990s), the Colorado has not reached the sea since 1960. That has negatively impacted what used to be one of the world's most productive fisheries, which previously benefitted from the nutrients brought by the river. (See "8 Mighty Rivers Run Dry From Overuse.")

Rebirth of a Lush Ecosystem

"We can't wait for the water to come," says Osvel Hinojosa Huerta, a Mexican ecologist with the nonprofit Pronatura Noroeste who has spent years studying the delta. Hinojosa Huerta, who is also a National Geographic Emerging Explorer, says the pulse flow will help restore about 70 miles (113 kilometers) of the river's course and 2,300 acres of floodplain, including freshwater marshes.

The region once boasted two million acres of wetlands that comprised one of the planet's great desert aquatic ecosystems. But decades of scarce water have reduced vegetation in the delta by 90 percent, and recent years of drought have made the situation even more extreme.

The flow will benefit hard-hit cottonwood and willow trees and provide habitat for a host of wildlife, including endangered birds such as Yuma clapper rails, Virginia rails, and California black rails, says Hinojosa Huerta. Migratory birds like warblers and flycatchers will also benefit from restored habitat in the delta, which serves as an important corridor on their journey. The southwestern willow flycatcher is one species of special concern, he notes.

The pulse flow is timed to coincide with maximum seed production of native willows and cottonwoods, says Hinojosa Huerta. Those trees have been dying off in the delta in recent decades, because floodwaters are the primary way they disperse their seeds, he notes.

"The reason the pulse flow ramps up quickly and then has a long tail is because the peak flow is to spread the seeds and the tail is to maintain soil moisture so the seedlings can grow and the roots can follow the water down into the soil," says Hinojosa Huerta.

Monitoring the Flow

For months scientists have been making detailed ecological studies of the lower Colorado River in order to gather baseline data before the dam gates open. Scientists from the U.S. Geological Survey, the Mexican government, the University of Arizona, the Universidad Autónoma de Baja California, Pronatura, and others have been studying the river and the surrounding ecology. Once the pulse flow starts, scientists will be monitoring water flows, salinity, temperature, groundwater recharge, vegetation growth, and impacts on birds, fish, and other wildlife.

A primary goal is to "see how water behaves in this system," says Jennifer Pitt, who works on Colorado River issues for the Environmental Defense Fund in Boulder, Colorado. Pitt and Hinojosa Huerta co-chair a binational working group on the river's restoration.

"We might learn that it would have been better to have less volume of water for more days, or that we got it just right, or maybe that we need twice the volume for one day, and so on," says Pitt. "Osvel [Hinojosa Huerta] did his dissertation on where the best bird diversity exists in the delta and found a strong correlation to open water, and now we'll be able to test his conclusions," she adds.

Binational Cooperation

The landmark agreement clearing the way for this spring's water release, known asMinute 319, was signed in November 2012 as an addendum to the 1944 water treaty between the U.S. and Mexico.

In addition to the pulse flow, the agreement allows Mexico to store water in U.S. reservoirs, and it specifies that both countries will share the benefits of water surpluses and the burdens of water shortages. It also promotes cooperation on conservation projects such as removing invasive tamarisk.

Minute 319 provides benefits that are "critically important on both sides of the border," says Anne Castle, the assistant secretary for water and science at the U.S. Department of Interior in Washington, D.C.

The agreement is the first in which two countries have come together to allocate water specifically to benefit the environment in a cross-border setting, Castle says. Governments in other countries are watching the pulse carefully, she added. Kyrgyzstan has already expressed interest in the agreement as a model for how an international river might be shared.

The current agreement between the U.S. and Mexico expires in 2017, but Castle says there is "very significant interest in discussing an extension of Minute 319.

The pulse flow will give us more information to work out the details for future agreements."

Hinojosa Huerta says a key to winning widespread support for the pulse flow along the Colorado has been assuring water users that the event will not affect their own water rights in any way. "Farmers, irrigation districts, and water managers have been very supportive," he says. "They are excited that the river is going to have water again."

The Colorado River Delta may never recover to its former size and glory, "but we know that if you add some water, life does return," says Postel. "We've seen rivers running dry all around the world, from being dammed and diverted, and here's one ecosystem of great significance that two countries are working cooperatively to try to restore. So many others need restoration too."

"Historic "Pulse Flow" Brings Water to Parched Colorado River Delta", 22/03/2014, online at: http://news.nationalgeographic.com/news/2014/03/140322-colorado-river-delta-pulse-flow-morelos-dam-minute-319-water/

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❖ Tonle Sap Lake fisheries a concern for dam Project

Already under attack by overfishing, pollution and deforestation, Tonle Sap Lake fisheries face an even bigger threat in the form of hydropower dams, according to experts.

Laos' planned Don Sahong Hydropower Project in particular has environmentalists fearing an emptier, less bio-diverse lake, and a nation pitched into protein shortages.

"[The Don Sahong] is of particular concern because it will obstruct the only fish migration channel available at Khone Falls in the dry season," said Eric Baran, director of the World Fish Centre's Greater Mekong Office.

At least 32 fish species are known to migrate between the Tonle Sap Lake and the Upper Mekong through the Khone Falls, just north of the Laos-Cambodian Border where the Don Sahong would be built, according to fish experts.

"I view it like a declaration of war by Laos on Cambodia and Vietnam," said ecologist Taber Hand. "The impact of reducing fisheries and sediment flow is more subtle than most acts of war but it has the same or greater . . . effect on national security."

Millions of people rely on fish from Cambodia's great lake as a source of income and food security. Scientists estimate between 60-70 per cent of the nation's fish catches come from the lake, providing Cambodian's main source of protein and omega-3 fats.

"One hundred per cent of the Cambodian population eats fish. We have no alternatives to completely replace fish as a source of protein right now," said Meach Mean, director of the 3S Rivers Protection Network.

Dam opponents have gone so far as to say deleterious impacts on Tonle Sap Lake fisheries would mean several steps backwards in alleviating the nation's poverty and malnutrition rates.

"No dams should be built until Cambodian's food security can be guaranteed," said Tek Vannara, executive director of NGO Forum.

But Don Sahong proponents maintain that if alternative fish migration routes fail, the project could be halted.

"The Don Sahong dam is a very expensive project. I don't believe for a minute that the dam would be stopped after such an investment if it turned out that impacts on fish migrations could not be

mitigated appropriately," said Ian Baird, a professor and fisheries expert at the University of Wisconsin-Madison.

"Tonle Sap Lake fisheries a concern for dam Project", 20/03/2014, online at:
http://www.phnompenhpost.com/national/tonle-sap-lake-fisheries-concern-dam-project

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❖ Sen. Barbara Boxer at water symposium: 'Water wars have got to end'

PALM SPRINGS — Sen. Barbara Boxer called for the West to set aside legal fights over water and adapt to drier times by moving more quickly to expand water recycling and adopt new water-saving technologies.

Speaking during a symposium on drought and water scarcity on Thursday, Boxer announced that she is preparing new legislation that would provide incentives for efficiency and conservation, promote drought preparedness and provide financing for wastewater recycling and other projects.

"Now with 38 million people in California, continued growth in the Colorado River basin and with climate change, we must reset water policy for the future," Boxer told an audience of about 300 people at the Palm Springs Art Museum's Annenberg Theater. "And the devastating drought we are facing has forced us to do it sooner rather than later. We must now confront a series of challenges: over-tapped aquifers, increasing risk of floods from aging levees, threats to our Bay Delta ecosystem and to our fisheries, and perhaps most significantly of all, the threats to all of our stakeholders."

She said that too often in recent years progress on water issues has been blocked "by a culture of conflict" pitting one stakeholder against another and regularly ending up in courtrooms.

"I reject that policy. All stakeholders must figure this out together," Boxer said. "The water wars have got to end, or we are not going to resolve the challenges facing us."

She said there has been progress in moving toward better management of groundwater in California, which accounts for roughly 40 percent of the water used in the state. She said there have been improvements in monitoring and management of the Coachella Valley's aquifer, which has seen declining water levels despite imported flows from the Colorado River.

"But some of our aquifers are being depleted to the extent that the ground is actually sinking beneath our feet," Boxer said. "We need to do much, much more."

Boxer, the Rancho Mirage Democrat who leads the U.S. Senate's Environment and Public Works Committee, said she is preparing legislation that she calls "W-21," standing for water in the 21st century.

The bill would strengthen the Environmental Protection Agency's Water Sense program, which promotes water conservation in consumer appliances and other products through information and rebates, she said.

Boxer added that her bill will also propose a tax credit for urban and agricultural water efficiency systems.

"Not unlike solar roofs, we should incentivize rainwater capture and gray-water systems that reuse water for outside the home, and drip irrigation and other water efficiency systems for our farmers," Boxer said.

Another piece of the legislation will provide financing for water recycling and storage programs supported by the U.S. Bureau of Reclamation and the Army Corps of Engineers. That financing, she said, should help accelerate the completion of water recycling projects.

Boxer said the bill will be ready to introduce in a few weeks. She said it will also include support for water-related research and data gathering, and will direct the EPA to lead a federal effort to develop "national drought resilience guidelines" to help water agencies and state and local governments make investments to better prepare for droughts.

Boxer delivered the keynote speech of the two-day symposium, titled Running Dry, which was co-sponsored by The Desert Sun, the Annenberg Retreat at Sunnylands and Harold Matzner, executive vice president of the Palm Springs Art Museum Board, with the participation of Coachella Valley water districts.

Jeanine Jones, deputy drought manager for the California Department of Water Resources, explained how the state is responding to a drought that is one of the most severe in the state's history. She said that includes being prepared for the possibility of yet another dry year.

"What if we're in for four years of drought? We know that various interest groups are experiencing pain now, so we need to think about being very cautious and conserving what we can to keep in mind that possibility that 2015 could also be dry," Jones said.

Jones said that while the drought can be called a crisis, it's also an opportunity to adjust approaches.

"A drought is the opportunity to take advantage of the teachable moment that's been presented to us," she said.

The forum also featured panel discussions focusing on drought and water scarcity, as well as the problems of the Salton Sea.

Hydrologist Jay Famiglietti, director of the UC Center for Hydrologic Modeling at UC Irvine, presented charts showing sharp declines in the amounts of groundwater in the Central Valley, and said the state needs to look at better management of its aquifers.

"We're poised for an epic decline in groundwater," Famiglietti said. "Can we really keep going forward with mostly unmanaged groundwater withdrawals?"

Buzz Thompson, director of Stanford University's Woods Institute for the Environment, suggested that in order to move toward a more sustainable water system, California needs to diversify its water supplies, adopt new technologies to improve water efficiency and turn to more water recycling.

Thompson noted that about 14 percent of the state's wastewater is being recycled and reused. He drew applause when he suggested that decisions about land use planning and development should be based on how much water is available.

Thompson, an expert in water law and water policy, also suggested that water rates can send a strong signal to encourage conservation.

"We need to charge people the full cost of their water," Thompson said.

The Coachella Valley would benefit from a long-term water conservation plan on a 100-year timescale, said Tom Davis, Chief Planning and Development Officer for the Agua Caliente Band of Cahuilla Indians.

Davis displayed a bar chart showing how per-capita water usage in the area by far surpasses water use in other desert cities such as Las Vegas and Phoenix. He expressed concern about declining water levels in the aquifer and called for tiered rates with stricter water budgets.

"Elimination of turf grass is one thing we really do have to take a look at," Davis said. In managing groundwater, he said, the area faces central questions: "Do you keep on mining? Or do you want to sustain?"

John Powell, Jr., president of the Coachella Valley Water District, touted the agency's efforts to combat groundwater "overdraft," in which more water is pumped out than is put back into the aquifer. He also said improving efficiency is a priority.

Gary Wockner, the coordinator for the Save The Colorado River Campaign, showed the audience a photograph of dry and cracked mud in the Colorado River Delta.

"We're all having impacts on this river, and we also all have a big opportunity and I think a challenge to try to get some life back into the river," Wockner said. He said that with reservoirs on the river low and falling, "the bottom line is that something is going to have to change."

Famiglietti agreed, saying recent research shows vast quantities of groundwater depletion in the Colorado River basin.

"We should all expect that the basin will no longer be able to meet its allocations and there will be pressure to rethink those allocations under the new reality," Famiglietti said.

While presenting the audience with stark facts about shrinking water supplies , Famiglietti said that although the situation is dire, it's encouraging to see people getting engaged.

"Here's the bright spot," he said. "Look at how many people are here."

"Sen. Barbara Boxer at water symposium: 'Water wars have got to end'", 21/03/2014, online at: http://www.desertsun.com/article/20140320/NEWS07/303200035/Sen-Barbara-Boxer-water-symposium-Water-wars-got-end-

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❖ $2.3 billion pipeline will provide for North Texas' water needs for years to come

Almost 60 years ago, with this area coming off a nearly seven-year drought, the Tarrant Regional Water District completed a long-range water supply plan to meet the growing needs of North Central Texas.

That plan included construction of Cedar Creek and Richland-Chambers reservoirs near Corsicana, projects that have proved to be very wise decisions by the visionaries who made them happen.

This week the TRWD Board voted unanimously to award a contract for the first phase of construction for the 149-mile Integrated Pipeline Project (IPL) that will bring water from those reservoirs to Tarrant County, providing ample supply for the region until 2030 or 2040.

The $92.9 million contract will fund construction of a 15-mile segment of the pipeline in Navarro County, and is expected to be completed in 2018.

Being built in partnership with Dallas Water Utilities, the $2.4 billion pipeline will also pump water from Lake Palestine to Dallas. By sharing resources, the TRWD says, the IPL will save an estimated $500 million in capital expenses and potentially $1 billion in energy savings over the life of the project.

With the rapid growth of the Metroplex, which is expected to have a population of more than 13 million by 2060, this kind of planning and execution by water providers is imperative if the area is to have any hope of meeting its water needs for the future.

When the completed pipeline project is operational, perhaps as early as 2021, the water district will be able to pump an additional 197 million gallons per day from the two reservoirs to Benbrook, *Star-Telegram*writer Bill Hanna reported this week. Dallas could pump up to 150 million gallons per day from Lake Palestine to Joe Pool Lake.
Although construction of the pipeline will affect about 900 landowners, TRWD points out that 99 percent of the project will be underground and out of sight.

For those portions above ground, like pumping stations, the water district said screening will be installed to mitigate sight issues.

The TRWD now provides water for more than 1.7 million people in North Central Texas, and the pipeline is a way to insure that its customers' needs will be met for years to come.

"$2.3 billion pipeline will provide for North Texas' water needs for years to come", 20/03/2014, online at: http://www.star-telegram.com/2014/03/20/5666849/23-billion-pipeline-will-provide.html?rh=1

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❖ Water district approves $92.9 million pipeline contract

FORT WORTH — The Tarrant Regional Water District board unanimously approved a $92.9 million construction contract Tuesday for a $2.3 billion pipeline designed to bring more water to the area from East Texas.

The bid by Garney Construction was "our lowest and most qualified proposer," said Wesley Cleveland, program director for the integrated pipeline project. The joint project is being built by the water district with Dallas Water Utilities.

The awarding of the contract signals that project will soon be laying pipe for the huge project.

"We are now getting into the meat of the IPL," Cleveland said.

Garney will build a 15-mile segment of the pipeline in Navarro County. It will eventually be part of a 149-mile pipeline that will bring more water to Tarrant County from Cedar Creek and Richland-Chambers reservoirs while also moving water to Dallas from Lake Palestine.

The first portion of the project is expected to be completed by 2018. but it is being built in stages to make it more affordable. If there is a need for more East Texas water sooner, some of the later phases can be built faster.

The water district provides raw water to 98 percent of Tarrant County residents.

Once it is completed, the pipeline will allow the water district to pump an additional 197 million gallons per day from the two reservoirs, near Corsicana, to Benbrook Lake. When the entire project is completed, Dallas will be able to pump up to 150 million gallons per day from Lake Palestine to Joe Pool Lake.

It should provide enough water for the water district until 2030 and perhaps until 2040, depending on population growth and water conservation efforts.

Construction of the pipeline has stirred some controversy. Last month, the water district voted to use eminent domain to acquire 11.6 acres for the pipeline. The land in Henderson County belongs to Dallas hotelier Monty Bennett, who has been an outspoken critic of the pipeline.

Last year, Bennett sued the water district, saying it violated the Texas Open Meetings Act when it approved parts of the pipeline project. The lawsuit says the board "rubber-stamped" a decision by district staffers and committees, with no public input.

Officials from Dallas and the water district said altering the pipeline route would likely cost millions and delay the project by at least a year.

Earthquake concerns

Board members on Tuesday also discussed whether seismic activity in western Tarrant and eastern Parker has had any impact around Eagle Mountain Lake, which the district controls.

David Marshall, engineering services director, said the series of earthquakes since November haven't posed any problems for Eagle Mountain's dam.

Marshall said seismologists from Southern Methodist University have installed temporary monitors at the dam and the water district is talking with the university about adding permanent monitors. But Marshall said the water district has had some monitoring equipment at the dam for about six years.

Board member Mary Kelleher, who had been pushing for the discussion on gas and drilling activity, said the water district needs to look more broadly at the topic.

"This it too dangerous of an issue to not discuss in depth because we only have one shot at our water supply," Kelleher said

In response, board Chairman Vic Henderson said the board will "do whatever we need to to satisfy we don't have a potential problem there."

But water district staffers said that they have no evidence of problems with gas or disposal wells around the lake being affected by seismic activity and that the legal authority to inspect them rests with the Texas Railroad Commission.

Henderson said Kelleher and board member Jim Lane could hold a public meeting later to discuss gas and drilling issues further. Any findings from that meeting would probably be sent to the board's environmental committee.

"Water district approves $92.9 million pipeline contract", 19/03/2014, online at: http://www.star-telegram.com/2014/03/18/5659998/water-district-approves-929-million.html

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