

ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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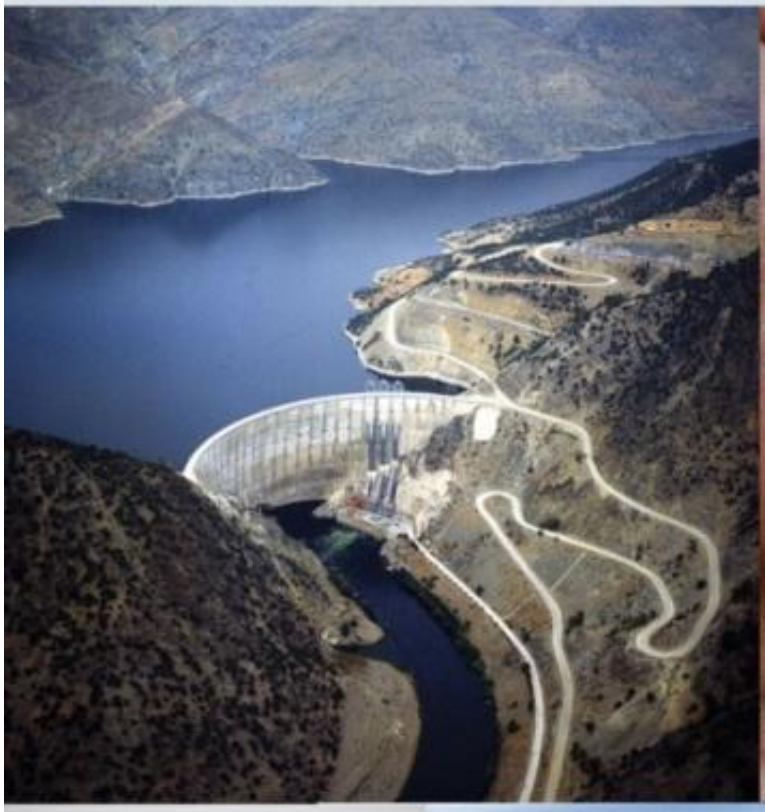



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Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
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❖ Will Turkey face water scarcity in 2030?

As is well known, water covers approximately 70 percent of the Earth's surface. However, 97.5 percent of surface water is salt water in the oceans and seas. The remaining 2.5 percent is fresh water. But water is not evenly distributed around the globe. While there is an abundance of water in some areas, we may see growing water shortages in others. Turkey, which has a varied climate due to significant topographic variations, suffers moderate drought once every six years and a severe meteorological drought every 18 years.

According to the water budget of the State Waterworks Authority (DSİ), Turkey's mean annual precipitation is 643 millimeters, which corresponds to 501 billion cubic meters of water. Of this, 274 billion cubic meters evaporate, while 69 billion cubic meters of water leak into aquifers and thus are lost to the water budget. Of the total amount, 158 billion cubic meters are mixed with rivers and lakes as surface water. While 7 billion cubic meters of water come from neighboring countries, 42 billion cubic meters of water are retrieved from groundwater contributing to surface water, and this amount is included in the water budget. Turkey's overall water potential equals 193 billion cubic meters. Considering the country's economic and technical constraints, the annual exploitable water potential has been calculated at 112 billion cubic meters. According to the Ministry of Development's plan for 2014, Turkey currently uses 39 percent of its exploitable water potential.

Irrigation accounts for 73 percent of water usage, 16 percent is used as drinking water and 11 percent in industry. According to the ministry's calculations, the exploitable amount of water in Turkey was 1,500 cubic meters per capita this year. It is estimated that the annual available amount of water per capita will fall to 1,100 cubic meters by 2030. According to the Falkenmark Index, which classifies countries in terms of their amount of water potential per capita, Turkey is a country with "water stress," since it has 1,000-1,500 cubic meters of water potential per capita. According to the same scale, if Turkey's per capita water potential were to fall below 1,000 cubic meters, the country would enter a state of water scarcity.

A growing population, urbanization, climate change, leaks in water distribution pipelines, mismanagement of water resources and inappropriate irrigation methods have a negative impact on the amount and quality of water resources and their efficient use.

For this reason, Turkey has taken steps on water management in recent years. The Ministry of Forestry and Water Affairs was established on June 4, 2011, to coordinate national water management. The General Directorate of Water Management, under the ministry, is responsible for

creating policies to better utilize water resources as well as develop a national and international water management policy. This general directorate was established to gather the dispersed water management structure under a single organization. Also, as a candidate country for European Union membership, Turkey has been required to integrate the EU Water Framework Directive into its water-related policies, regulations and laws since 2009. Within the process of harmonization with the EU Water Framework Directive, the General Directorate of Water Management has been carrying out a capacity development project to establish an effective monitoring system for water quality, preparing River Basin Protection Action Plans (RBPAP), determining specific provisions for the Capacity Building to Implement the Flood Directive in Turkey and carrying out the project.

Within this process, preparations for a new water law were brought onto the agenda. As the Law on Water (1926) was unable to meet existing needs, a new water law was needed that would also address the conflict between authority and responsibility in current water legislation, the gaps in water-related legislation, the growing population, urbanization and the necessity of assessing water not only in terms of quantity but also in terms of quality. For this reason, a process was launched to prepare a new water law. Currently, the draft work has been completed and opened for discussion, and with the new water law, being reviewed before its presentation to Parliament, the aim is to further reinforce the implementation of the EU Water Framework Directive while also meeting Turkey's needs. These new structures are being made to allow greater efficiency in the water system. But are they enough to solve the looming problem of water scarcity in Turkey? The answer is "No."

Above all, this structure based on demand management must shift towards supply-oriented management in line with the global trend. Furthermore, it is not only water suppliers but also other stakeholders who should act on this issue. People should be well-informed and take responsibility for the efficient use of water resources to provide the maximum yield. On the other hand, climate change is an undeniable environmental problem around the globe. Water resource management systems must be flexible and powerful enough to adjust to different precipitation trends, periods of drought and new climatic conditions.

"Will Turkey face water scarcity in 2030?", Tuğba Evrim Maden, Today's Zaman, 22/12/2013, online at: http://www.todayszaman.com/news-334487-will-turkey-face-water-scarcity-in-2030.html

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❖ Key Challenge Looms for Longest Undersea Water Pipeline

Work has begun on the most complex phase of the world's longest undersea water pipeline, a project to bring freshwater from Turkey beneath the Mediterranean to northern Cyprus that proponents say may help reunite the island.

The first kilometer of pipeline was laid this month on the $484 million project backed by Turkey Prime Minister Recep Tayyip Erdogan to quench thirsts in the breakaway Cypriot state. The centerpiece is an 80-kilometer (50-mile) pipeline to be suspended as much as 280 meters (919 feet) under water.

The project, its finish date already pushed back three months to June by technical challenges, is proceeding as reunification talks remain stalled on a divided island the World Resources Institute ranks as one of the 17 most water-stressed places on Earth while Turkey and Turkish Cypriots have bickered with Cyprus over offshore natural gas discoveries.

Water from Turkey's pipeline to the mythological island birthplace of the goddess of love Aphrodite should be seen as "an opportunity for peace" in Cyprus, Forestry and Water Works Minister Veysel Eroglu said.

The pipeline, though, is "not the best solution both in economic -- too expensive -- and environmental terms," said Cypriot government environment commissioner Ioanna Panayiotou. "Water is sensitive and might get polluted during the transfer."

Mend Fences?

Cyprus has been split between the south, a European Union member, and Turkish-held north since Turkey invaded 39 years ago to quash a coup aimed at uniting it with Greece. Greek Cypriots make up three-quarters of the 1.1 million residents on the semi-arid island, the Mediterranean's third-largest.

Should both sides find a way to mend fences over water and gas, "it may create enough momentum to really start talking again in earnest," said Manfred Lange, director of Cyprus Institute's Energy, Environment and Water Research Center in Nicosia.

Turkey also plans to extend a subsea power transmission line to northern Cyprus, which received 800 million liras ($388 million) of Turkish grants and loans last year.

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The source of the water in Turkey, the Dragon River, has an annual capacity of 700 million cubic meters (185 million gallons), about 1/10th or 75 million cubic meters of which is to be piped to northern Cyprus on completion.

Assessing Risks

That's timely as almost all water in Cyprus and northern Cyprus streams "is being withdrawn every year to meet the demand of farms, businesses and households," said Paul Reig, an associate for the Washington-based research group WRI.

That poses "risks to economic development, the environment and national security," Reig said by e-mail. Without alternatives such as water from neighboring regions, desalination and "more efficient use of water for municipal, industrial and agriculture needs, Cyprus and northern Cyprus are vulnerable to even the slightest decrease in supply or increase in demand for freshwater."

Greek Cypriots meanwhile are pinning hopes on a naturalgas field found off the south shore in 2011 by Houston-based Noble Energy Inc. (NBL) It contains an estimated 3.6 trillion to 6 trillion cubic feet whose proceeds may offset EU sanctions and financial-service industry losses. Total SA (FP) of Paris and Eni SpA (ENI) of Italy are also exploring the area for gas.

Bring Peace?

"We want to exploit the use of natural gas and transfer of water and electricity from Turkey to bring peace and prosperity to the island of Cyprus and foster cooperation and friendship between Turkey and Greece," Turkish Cypriot leader Dervis Eroglu said, according to the Anatolia state news agency.

While Turkish Cypriots are relying on Turkey for fresh water, the Greek Cypriot south is building three desalination plants to add to its existing two.

Cyprus is relatively dry, rationing water on occasion with an average annual rainfall of 19.7 inches -- what much of Colombia receives each month.

The pipeline is designed to encourage farmers to diversify crops, curb overuse of aquifers and supply water around the clock, something none of the 28 municipalities in northern Cyprus currently do.

The 107-kilometer pipeline including onshore sections will link Alakopru Dam near Anamur on Turkey's coast to a dam being built in Gecitkoy, northern Cyprus. More than 90 percent of the dam work is finished.

Spans of 500 meters will be moored to the seabed up to 1,400 meters deep, close to a mile underwater, with a buoy, tether and anchor system, designs show.

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'Doesn't Exist'

The pipeline "will be the first of its kind," Akif Ozkaldi, head of Turkey's General Directorate of State Hydraulic Works, said in an interview. "Such a suspended subsea pipeline of this size doesn't exist in the world."

Among pipeline risk-scenarios assessed were dangers from sinking vessels, quakes and tsunamis, said Ayhan Taskin, head of DSI's drinking-water department. First designed to be 130 meters under water, final designs lowered the pipeline "to avoid submarines."

"Key Challenge Looms for Longest Undersea Water Pipeline", 19/12/2013, online at: http://www.bloomberg.com/news/2013-12-19/key-challenge-looms-for-longest-undersea-water-pipeline.html#disqus_thread

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❖ Iran: Residents of Ahvaz hold fifth human chain to protest water diversion

Thousands of residents of the southern Iranian city of Ahvaz formed a human chain on Thursday for the fifth time to protest against the regime's plans to divert water from the Karoon river to central Iran.

The move would deprive the city of drinking water, and increase illness and air pollution - already occurring in the Ahvaz due to the low river level.

The 720km-long Karoon was once the largest river in Iran, but locals blame the regime authorities for a series of rivers in country running dry.

The protesters carried signs that read: "Karun is for Khuzistan", "I am a farmer, I would not give a drop of water of Karoon", and "We will save Karoon."

The river rises in the Zard Kuh mountains of the Bakhtiari district in the Zagros Range, and is joined by tributaries including the Dez and the Kuhrang before passing through Ahvaz, the capital of the Khuzestan Province of Iran, and meeting the Persian Gulf.

In Biblical times, the Karoon was known as the Pishon, one of the four rivers of Eden/Paradise.The protesters emphasized that their gathering is going to be held every week until their demands are met.

"Iran: Residents of Ahvaz hold fifth human chain to protest water diversion", 21/12/2013, online at: http://www.ncr-iran.org/en/news/iran-protests/15565-iran-residents-of-ahvaz-hold-fifth-human-chain-to-protest-water-diversion

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❖ Water reserves of Tehran's dams averagely reach 23 percent of capacity

The water reserves of dam reservoirs in Iran's capital city reached a critical level and stood at 23 percent of total capacity, Mehr news agency reported on Dec. 21.

Volume of the water in 5 dam reservoirs of Tehran has increased by 232 million cubic meters during current crop year (started in September 22, 2013), compared to the same period of last year, the report said.

Currently total water volume in Tehran's dam reservoirs has reached 426 million cubic meters, which indicates a decrease by 35 percent compared to the same period of last year.

The dam reservoirs' input during current crop year has reached some 146 million cubic meters, which indicates a 22 percent decrease compared to same period of last year.

On October 14, Iranian PANA news agency quoted the Managing Director of Tehran Water and Wastewater Company Mohammad Parvaresh as saying that Iran's capital city faces a 40 million cubic meter water shortage.

Parvaresh said on July 21 that Tehran province's water consumption increased by 11 percent in summer compared to previous year.

According to the reports, Tehran experienced water interruptions for a few hours in some areas in late July.

Water shortages have always been a pressing problem in Iran. The country is located in the arid zone and over the past 40 years has repeatedly faced drought.

The drought of 1992-2002 caused considerable damage to agriculture. Quotas for fresh water were applied in some cities including Tehran.

"Water reserves of Tehran's dams averagely reach 23 percent of capacity", 21/06/2013, online at: http://en.trend.az/regions/iran/2224046.html

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❖ Comprehensive Order for Engineering, Procurement, and Construction plus Operation and Maintenance of a Large-scale Water Desalination Plant in Basrah, Iraq

Tokyo, Dec 13, 2013 (Menafn - JCN Newswire via COMTEX) --Hitachi, Ltd. today announced that a consortium comprising three companies - Hitachi, OTV (a water processing plant manufacturer and subsidiary of the French environmental service company Veolia Environment), and The Arab Contractors (a nationally owned construction company in Egypt) - has received a comprehensive order from the Iraqi Ministry of Municipalities and Public Works for the engineering, procurement, and construction (EPC) of a large-scale water treatment desalination plant in Basrah, in the south of Iraq.

The order will also include Operation and Maintenance (O&M) management for a period of five years. The value of the order will total over 25 billion yen, and Hitachi will oversee the project as the leader of the three-company consortium. Construction is scheduled to begin in February 2014, with completion scheduled for July 2016.

Hitachi has undertaken business measures tied into infrastructure export activities being rolled out by the Japanese Ministry of Economy, Trade and Industry. These measures were instrumental in securing this order.

Basrah, located in the center of southern Iraq, is the nation's second largest city, but its water infrastructure is far from adequate. Existing water purification facilities, with a total capacity of 400,000 cubic meters per day, are unable to keep up with the city's huge demand for fresh water, which is estimated at up to 900,000 cubic meters per day. Even the existing water infrastructure facilities are deteriorating. The goal of the new water purification plant will be to improve the fresh water supply conditions in Iraq, using RO (Reverse Osmosis) facilities to purify river water drawn from close to the river mouth, where salinity is relatively high. This will be Iraq's largest level of capacity of single water purification plant, capable of supplying 199,000 cubic meters of fresh water per day*.

Hitachi has an extensive track record in the delivery of water treatment plants worldwide, and will leverage this experience and expertise as it participates in the construction and renovation of the new water desalination plant as the consortium's leader. This is also the first time since the end of the Iraq

war that a Japanese company has received an order for a large-scale water infrastructure project based on internal funds from the Iraqi government, rather than Japanese government yen loans.

Plans are currently underway for new business in Iraq, including the construction of further city water supply facilities, and Hitachi will continue its participation in this business in the future. Hitachi hopes to contribute to Iraq's recovery by putting in place a reliable water infrastructure, and by maintaining and improving the nation's water environment. Hitachi has positioned the water environment solution business as a growth field in the context of the Social Innovation Business, and will continue its efforts to accelerate the global rollout of these business activities.

*Equivalent to a supply volume for a population of 400,000.

"Comprehensive Order for Engineering, Procurement, and Construction plus Operation and Maintenance of a Large-scale Water Desalination Plant in Basrah, Iraq", 13/12/2013, online at: http://www.menafn.com/1efbf668-6748-4bd2-ad1c-b05809ad1324/Comprehensive-Order-for-Engineering-Procurement-and-Construction-plus-Operation-and-Maintenance-of-a-Largescale-Water-Desalination-Plant-in-Basrah-Iraq?src=main

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❖ 1997 UN Watercourses Convention: 33 Parties, 2 More to Bring it in Force

On 20 December 2013, Ireland became the 33rd Party to the 1997 UN Convention on the Non-navigational Uses of International Watercourses, only seven days following the accession of the United Kingdom to the Convention. Of the 33 ratifications, four occurred in 2013 (Ireland, Montenegro, Niger, and the UK), five in 2012 (Benin, Chad, Denmark, Italy, and Luxembourg), three in 2011 (Burkina Faso, France, and Morocco), three in 2010 (Greece, Guinea-Bissau, and Nigeria) and two in 2009 (Spain and Tunisia). If the present rate of ratifications continue, the Convention could come into force within the next year, possibly in a matter of months. The Convention requires 35 parties for it to achieve that status.

Curiously, of the 33 parties to the Convention, the vast majority are from either Africa (11) or Europe (16). Only one ratifying state is found in Asia (Central Asia to be precise) and none come from the American hemisphere. Five others are from the non-African Middle East region, albeit a total of eight MENA nations are now a party to the Convention.

It is certainly peculiar that not one nation from the Americas has ratified the Convention. Venezuela and Paraguay were two very early signatories to the Convention. Yet, neither has made much headway toward full party status, and no other country in the region seems poised to join the Convention. And in Asia, only Uzbekistan has made the commitment.

What this geographic distribution portends is still unclear. At the very least, it suggests a certain geographic bias toward (and against) the Convention. And, once the Convention comes into force, that could raise the question of whether the geographic distribution of ratifying nations is adequate to project the Convention globally. Nations in Asia and the Americas, for example, might claim that the principles codified in the Convention apply only regionally – in Africa and Europe, and possibly the Middle East.

Those nations who are now full parties to the Convention have made a commitment to abide by the Convention's norms. If they want the rest of the world to follow suit, they may want to consider developing a compliance strategy, possibly even a promotion strategy aimed at convincing other nations and regions to join the Convention. Additionally, given that only two ratifications are needed

before the Convention comes into force, they need to begin thinking about a Convention Secretariat to administer the Convention and related activities (such as monitoring compliance and encouraging membership).

"1997 UN Watercourses Convention: 33 Parties, 2 More to Bring it in Force", 21/12/2013, online at: http://www.internationalwaterlaw.org/blog/2013/12/21/1997-un-watercourses-convention-33-parties-2-more-to-bring-it-in-force/

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❖ Why We Should Worry About Last Week's Historic Snowfall in the Middle East

"There was snow happening before, but not like this one," said Sami Abu Heiba, 26, who lives in a village just outside Ramallah, a city in the Palestinian territories. He describes a typical snow as maybe "last[ing] for hours, or a day maximum. It doesn't close the roads, it doesn't [break] the trees."

Historic winter storm Alexa and her fallout brought such conditions to a wide swath of the Middle East over the last week as it hit Egypt, Turkey, Iran, Israel, Syria, Jordan, and Lebanon. Israel had not experienced such a heavy December snowfall since 1953. The Palestinian media, says Abu Heiba, has reported that the last snowfall of this magnitude happened 140 years ago. While scientists are cautious about linking specific weather events to climate change, this unusual snowfall may be tied to a warming planet.

Scientists say that as climate change spikes temperatures around the world, the atmosphere is able to hold more moisture. This increases the chance for heavier-than-normal snowfall, especially in places that experience cold temperatures already, like the United States' Midwest. In places where it is normally too warm to snow anyway, this doesn't usually make a difference, except for when a freak cold weather system moves through, as what may have happened with Alexa.

"We have seen some indication that the amount of water vapor is already increased in the atmosphere, probably in response to increasing global temperatures," said Kenneth Kunkel, an expert on extreme weather events and senior scientist at the Cooperative Institute for Climate and Satellites, administered in part by the National Oceanic and Atmospheric Administration. "So this event that occurred in the Middle East, there may have been a little more moisture around than the case 30 or 40 years ago for the same event. And so that might have contributed to the amount of snow they got."

The snow has prevented Bil'in resident Jaber Abu Rahmeh, who is 25, from getting to the doctor despite having the flu and a stomach problem that keeps him up at night.

Abu Rahmeh, along with many others, had no electricity for four days. He's not used to the cold, he says, and wears a hat and layers inside, even though the heat works inside his home. Despite reports of some collaboration during the storm, Abu Rahmeh says his Israeli-run electric utility lagged in getting power back to its Palestinian customers in the West Bank, even as power supply and infrastructure proved more robust in Israel.

"They didn't give any help to the Palestinian in this kind of weather," Abu Rahmeh said. "There is no kind of communication. No land phones, no cell phones, no internet, nothing. And they can have anything."

For those with less resources at hand, the storm has more dangerous implications. Among Syrian refugees in Lebanon, according to the *New York Times*:

"Families huddle in shacks that they built themselves, stitching together burlap sacks or hoisting bright plastic tarps advertising goods they cannot afford. Some of the shelters have flooded, their dirt floors covered with soggy cloth, and their occupants fear that as more snow piles on, they will collapse."

It's a well-known argument that natural disasters can work to exacerbate existing crises. And such cases are likely to continue cropping up. While climate change may have intensified this storm, its longer term effect on the Middle East's looks different than the photos circulating on the internet. Eventually, warming is expected to make cold weather like Alexa even rarer in the region than it is already. Higher and higher temperatures will first burn off any existing moisture in the semi-arid region, even puddles and plant-stored water, says Kevin Trenberth, senior scientist at the National Center for Atmospheric Research.

"Once it gets to a wilting point, then there's no more moisture, and that's when things really warm up," Trenberth warns. "In the Middle East … there are some desert areas, water is a substantial issue, there's a lot of shortages, there's not a lot of vegetation out in the open country. So it's already dry and any extra heat then indeed can lead to more extremes on the warm side."

Though now preoccupied by a snow like he has never seen before, it's not too hard for Abu Heiba to imagine such a scenario.

"It's everybody's fault," he said. "We're just very bad with our Mother Nature. We are just now paying back."

"Why We Should Worry About Last Week's Historic Snowfall in the Middle East", 20/12/2013, online at: http://www.policymic.com/articles/77093/why-we-should-worry-about-last-week-s-historic-snowfall-in-the-middle-east

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❖ U.N. seeks $6.5 billion for Syria crisis in 2014

(Reuters) - The United Nations appealed for a record $6.5 billion for Syria and its neighbors on Monday to help 16 million people, many of them hungry or homeless victims of a conflict that has lasted 33 months with no end in sight.

The Syrian appeal accounted for half of an overall funding plan of $12.9 billion for 2014 to help 52 million people in 17 countries, announced by U.N. emergency relief coordinator Valerie Amos at a meeting of donor countries in Geneva.

"This is the largest amount we have ever had to request at the start of the year," Amos told a news conference, referring to the worldwide appeal.

The money requested for Syria, covering food, drinking water, shelter, education, health services and polio vaccines, was the largest U.N. appeal ever for a single crisis.

Well over 100,000 people have been killed in a civil war that has uprooted millions of people, devastated many cities and wreaked havoc on the economy and basic public services.

Syria's currency has plummeted by 80 percent since the revolt began in March 2011, and destruction of the water network has left 10 million people - almost half the pre-war population - relying on the United Nations to chlorinate water.

"There are parts of country where for 22-23 hours a day people aren't getting electricity. Fuel is scarce," said Amos, who visited Damascus briefly on Saturday to meet ministers.

"Even if the violence were to stop tomorrow we would have to maintain help on the humanitarian front," she said.

Amos was cautious about chances of a breakthrough at peace talks between President Bashar al-Assad's government and his opponents that are scheduled to begin in Switzerland on January 22.

"Obviously the expectations have to be modest in this point of time," she said.

"MODEST SHIFT"

The United Nations estimates that 250,000 Syrians are living under siege as winter bites, most of them encircled by government forces, but also including 45,000 in two towns in the north that are besieged by anti-Assad rebels.

The U.N. Security Council issued a presidential statement on October 2 calling for protection of civilians, demilitarization of schools and hospitals, and improved access for aid workers.

"We are nowhere near that yet," Amos said. "We have seen a modest shift in terms of some of the administrative burdens ... (but) we are not seeing any progress in those areas so far."

Amos will convene a group of world powers and neighboring countries - including Syria's allies Russia and Iran but not the Syrian government - for a second round of private meetings in Geneva this week, following similar talks on November 26.

The head of MSF International, part of Medecins Sans Frontieres, also known as Doctors Without Borders, has written to the governments involved demanding an end to the Syrian government's control of aid, since it limits or bans assistance to opposition areas, especiallymedical supplies.

The United Nations began airlifting aid from Iraq on Sunday, as it was too dangerous to go by land, said Antonio Guterres, head of the U.N. refugee agency.

The U.N. is seeking $2.3 billion to help 9.3 million people in Syria next year, compared with its 2013 appeal of $1.4 billion, of which only 62 percent has been received.

For five neighboring countries - Egypt, Iraq, Jordan, Lebanon and Turkey - it is seeking $4.2 billion to assist up to 4.1 million Syrian refugees and host communities who will be given food aid, including cash or vouchers.

"There is a tragedy in the plight of Syrian refugees, but let us not forget that they would have no place to go without the generosity of the neighboring countries," Guterres said.

Guterres, a former prime minister of Portugal, urged European countries to share the burden and allow in Syrian refugees fleeing conflict or persecution.

"There is something fundamentally wrong when a Syrian family with women and children that has fled this dramatic conflict in Syria needs to take a boat with high risk of drowning to get to Europe," he said, describing Syria as "the most dangerous crisis for global peace and security since the Second World War".

The U.N. World Food Programme aims to feed 4.25 million people in Syria, where it reached only 3.4 million in November.

The overall U.N. appeal for 2014 also includes aid to Sudan, South Sudan, Yemen, Democratic Republic of Congo, Afghanistan and the Philippines.

"U.N. seeks $6.5 billion for Syria crisis in 2014", 16/12/2013, online at: http://www.reuters.com/article/2013/12/16/us-syria-crisis-aid-idUSBRE9BF0UG20131216?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=c287b9022f-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-c287b9022f-250657169

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❖ Winter in a tent: Syrian refugees face cold and snow

For the 2.2 million people who have fled the bloodshed in Syria, the months ahead will be grim

The smell of home is what Aysha Al Husseini misses—the olives and grapes that grew outside her house. The apples. The rich earth. These are the smells of Syria, the smells she longs for most since becoming a refugee.

Eight months pregnant in October and facing the possibility of a caesarean section for which she had no money to pay, Al Husseini was one of countless refugees in tents and abandoned buildings in Jordan and Lebanon wondering how they would manage as winter approached.

That winter has come.

For the 2.2 million people who have fled the bloodshed in Syria, the months ahead will be grim. In North Lebanon and the Bekaa Valley, where many refugees have sought safety, their shelters offer only a hint of protection against dampness and bitterly cold temperatures. In early December, the first winter storm hit the valley, shrouding the informal camps—there are more than 200 there now—in a blanket of wet snow and hinting at what's to come.

"I don't have a heater or anything," a woman called Layla told Oxfam in October. She did not want to give her real name. She had been living with her husband and two children in a settlement in northern Lebanon for 10 months and had already weathered one miserable winter on the move inside Syria after their home was burned to the ground.

"Fear and horror is what we felt. We felt things that I'm not sure I want to recount," said Layla. In October, with another winter looming, a new set of fears simmered.

"We're going to set up a barrier in front of the door to stop water and rain from coming in and we'll try to get a new plastic cover to place over our tent—maybe that will help us survive the winter," said Layla. But how she would pay for it she didn't know.

"Most likely we will have leaks this winter," she said.

Figuring out how to stay warm was also on the mind of said Em Mohammed Juwayer, who, for more than a year, has been living with his young son in a settlement of tents near the town of Qualamoun in northern Lebanon and knows well what lies ahead.

"A heating stove that uses wood is the most important thing. I don't have one," he said. "We cover the shelter in plastic sheeting and try to close it up in the winter, but you can see how open it is. Gusts of wind come through."

Juwayer's son sounded worried.

"In the winter it's going to be very cold and it will snow," he said. "Water will flood the houses and the valley here will also flood. Our slippers will be washed away…Last year, water kept flooding the house and we didn't sleep."

To help some of the most vulnerable families in Lebanon survive the harsh months ahead, Oxfam is distributing cash and vouchers to 11,900 of them to help buy plastic sheeting, heating stoves, fuel, blankets, and warm clothing. The support will benefit about 59,500 people.

In Jordan, Oxfam will also be distributing winter kits that include blankets, gas heaters, and four months of fuel for families living in apartments. For those camped out in tents, the kits will include blankets and plastic sheeting.

Oxfam has already helped more than 500,000 people in the nearly three-year-old conflict, including 250,000 inside Syria, and it aims to reach 150,000 more by the end of March. Providing people with access to clean water and sanitation has been a key part of Oxfam's response. Support has also included cash assistance—sometimes through ATM cards—so families can buy basics like food and hygiene products and pay their rent.

"It (Oxfam's work) might not solve all my problems," said Tahseen Al Khateeb, a refugee in Jordan who received cash support in October to help with rent and other basics, "but sometimes a little piece of gravel can hold up a whole house."

"Winter in a tent: Syrian refugees face cold and snow", 17/12/2013, online at:
http://www.oxfamamerica.org/articles/winter-in-a-tent-syrian-refugees-face-cold-and-snow?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=b623f6d159-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-b623f6d159-250657169

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❖ Palestinians thirst for water treatment plant

Polluted water and lack of treatment plants have hurt the environment as well as human health in the West Bank.

Salfit Governorate, Occupied West Bank - Khaled Sabra stands next to a broken cement wall across from his house in the Palestinian village of Bruqin. Last winter, the rains caused the stream running below the wall to rise until it overflowed, flooding Sabra's house and other homes in the centre of the village.

The water also carried sewage and industrial effluent from the Palestinian village of Salfit and the Israeli settlements of Ariel, Ariel West and Barkan.

Community members had to break the wall so the polluted water could recede from their homes and the street. The effects of the pollution, however, remained even as the contaminated water flowed away.

All of Sabra's seven children and his wife have allergies, respiratory difficulties and skin diseases, he says as he rolls up the sleeve of his young daughter's dress to show the scabbing from a rash. The doctor keeps prescribing medications and treatments, but they are unaffordable and, Sabra says, not a solution for the source of the ailments: the polluted water.

Many of Bruqin's 4,200 residents, as well as those of nearby villages, are experiencing similar health issues due to the polluted water, according to the village's mayor, Nafez Barakat. In response to a petition from the Bruqin municipality, the Palestinian Authority recently approved plans to build a two-kilometre-long pipe to move the wastewater running through the village centre.

But Jamal Al-Deek, the mayor of the downstream village of Kafr Al-Deek, is not satisfied with this plan. "If you want to cover two or three kilometres, it's not a solution. You make a problem for another village," he says. "We need a complete solution. Make a treatment plant."

A treatment plant could serve all seven Palestinian villages in the area. It would protect residents and the surrounding agricultural areas from the pollution and provide water for agriculture.

The treatment plant that never was

Plans to build a treatment plant have been in the works since 1994, according to Adel Yasin, director of the wastewater department at the Palestinian Water Authority (PWA). The plant was supposed to be the first constructed in the West Bank under Palestinian control.

The project received approval from Israeli authorities in the mid-1990s, and construction began in 1998 with funding and support from the German development bank KfW.

But two months later Israeli soldiers came and ordered work to stop, recalls Saleh Afaneh, head of the technical department in the Salfit municipality. The Israeli military cited security reasons for stopping the construction but did not provide any further explanation, Yasin adds.

In 2002, Israel gave approval for the treatment plant to be built in a second location, but plans were put on hold when it was found that treated water from the plant would mix with polluted water from Ariel just 20 metres downstream.

Through the Joint Water Committee (JWC), a Palestinian/Israeli body managing water-related issues in the West Bank, the Israelis proposed connecting Ariel to the Salfit plant. The Palestinians rejected this option because they saw it as granting implicit recognition to the settlement, according to Yasin.

The second option was to build a pipeline to bring Ariel's sewage across the Green Line for treatment in Israel. The Palestinians approved this project in 2008. Five years later, Israel has yet to begin construction on the pipeline - so the project to build a wastewater treatment plant for Salfit remains on hold.

Not just Salfit

Starting in 1996, the PA **named** the construction of wastewater treatment facilities as one of its top development priorities, according to a 2009 report by the Israeli human rights organisation B'Tselem. Today, only two plants have been built, although projects for at least three more are in various stages of implementation.

Politicking and deadlock in the JWC have delayed development, according to Eyad Yacob, a former member. The committee has only met once in the past two years and not approved any projects. Projects also often need additional approval from the Israeli Civil Administration, further slowing the process. And in the past, Israel has approved the construction of facilities only if Palestinians allow settlements to connect to them as well, according to B'Tselem.

For Palestinians, this pits environmental and health concerns against fundamental political principles. "We don't wish to have any cooperation between Palestinians and the settlers," Yasin explains.

Environmental effects

The failure to develop adequate wastewater treatment infrastructure has led to the pollution of fresh water resources in the West Bank. The five streams Palestinians in the West Bank have historically relied on for drinking water and irrigation are now flowing with sewage, says Malek Abualfailat, a project manager at Friends of the Earth Middle East (FoEME). Palestinians and Israeli settlers both contribute to this pollution.

Thirty-three percent of Palestinian wastewater is released directly into valleys without treatment while 65 percent is collected in cesspits that leach into the ground, according to a 2011 PWA report.

Many Israeli settlements treat their wastewater before releasing it into nearby valleys. But, in several settlements such as Ariel, wastewater treatment facilities do not always function or treat sewage to adequate levels, according to Youval Arbel, a project director at FoEME.

Additionally, many highly polluting factories have moved into settlement industrial zones, such as Barkan and Ariel West, to take advantage of a lack of regulation.

In recent years, Nitzan Levi says, the problem with pollution from settlements has improved. Levi is the director general of the Municipal Association for Environmental Quality in Judea, a settler environmental group. He and others have pushed to close regulatory loopholes and enforce environmental standards at a local level.

Even so, the combined effect of Palestinian and Israeli water pollution is threatening to contaminate the Mountain Aquifer, which is located beneath the West Bank and part of Israel. A 2004 report by FoEMEcalled the Mountain Aquifer the "largest and most significant groundwater reservoir in the region".Palestinians are almost entirely reliant on it for fresh water and it is also a water source for Israeli population centers.

In areas close to Tulkarem and Qalqilia, in the northeastern West Bank, wells tapping into the aquifer have been closed because they reached levels of pollution above safe drinking standards, Arbel says.

The threat of polluting the aquifer, according to the FoEME report, is "one of the most severe environmental problems threatening Palestinians and Israelis".

More immediately, the pollution is reaching Palestinians through the food chain. In the Salfit area, for example, animals drink from polluted streams and graze in areas nearby. "I don't drink milk or eat meat from this area anymore," said Afaneh, the engineer overseeing the Salfit project.

In the absence of a solution, Palestinian residents like Khaled Sabra are left to live with the short-term consequences as a broader environmental crisis waits on the horizon.

When he moved to Bruqin in 1987, Sabra said, "it was the most beautiful area in the country". Now, the situation is insufferable. "Where else can I go?" he asks, as he stands holding his daughter's hand by the polluted stream running in front of his house.

“Palestinians thirst for water treatment plant”, 21/12/2013, online at:
http://www.aljazeera.com/indepth/features/2013/12/palestinians-thirst-water-treatment-plant-20131216121711924 92.html

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❖ New Israeli-Jordanian-Palestinian Water Agreement Will Not Solve Shortages

Mideast observers were happily surprised to hear about a water-sharing agreement signed at the World Bank headquarters last week between the Israeli, Jordanian and Palestinian governments. "This is an agreement with a humanitarian aspect, designed to aid those who need water. There is an ecological aspect as well since we are trying to save the Dead Sea," explained Jordanian Minister of Water Minister and Irrigation Hazem Nasser. Israeli Minister Shalom was even more bombastic calling the accord "historic.... a realization of Herzl's dream." Amidst the media fanfare and euphoric propaganda, it is important to distill what this new accord delivers and what it doesn't.

The centerpiece of the agreement is a new desalination plant, to be established on the Red Sea in Aqaba, Jordan that will provide water for the city and the vicinity, including the neighboring Israeli city Eilat and the nearby rural settlements. In addition, an estimated 100 million cubic meters of the high salt brine produced by the desalination plant is to be pumped annually via a conduit in Jordan and discharged into the Dead Sea, which has been steadily shrinking for decades. Further north, Israel agreed to sell some 80 million cubic meters of water (80 billion liters) each year from the Kinerret lake to the Jordanians and Palestinians. The projected price tag for the entire initiative: $400 million is a fraction of a much more ambitious, multi-billion program to refill the Dead Sea, recently endorsed by the World Bank.

As the first new agreement in many years that coordinates natural resource use between Israel and its neighbors, its very existence constitutes good news -- as is the introduction of additional desalinated water into an increasingly parched region. Yet, the 100 million cubic meters of brine that is to reach the Dead Sea - is only a tenth of the 1000 million cubic meters which used to reach it naturally, flowing via the River Jordan. (During the past fifty years most of the stream's waters were diverted by Syria, Israel and Jordan.) This agreement in no way saves the Dead Sea from dying. The unique saline lake, located at the lowest place on earth will continue its alarming retreat each year with or without the new pipeline. Environmentalists also raised a series of environmental concerns which are now circumvented, by having the pipes laid on the Jordanian side of the border, where civil society's ability to challenge the plan is not as formidable.

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The essence of the agreement, therefore, involves providing additional water to Jordanian and Palestinian communities to ameliorate their chronic shortages. Households throughout local cities typically only enjoy water delivery a few times a week. Any relief will be welcome to residents who have watched their per capita allocations steadily erode. If desalination can provide additional water, then cooperating to deliver it more efficiently and equitably across the region makes perfect sense. But it is important that any enthusiasm be tempered by hydrological realism. Like the other water supply strategies recently proposed in the Middle East -- it will not provide meaningful improvement. The relentless increase in population undermines any meaningful progress.

Jordan offers an excellent example of these dynamics. In 2009 Jordan reported that its citizens had access to only 145 cubic meters (145,000 liters) per year making the country one of the most water scarce in the world. Even without hundreds of thousands of refugees from Iraq, its natural population growth rate was historically extremely high, averaging six children per family for much of the country's history. Between 1980 and 2010, Jordan's population grew from 2.2 million to 6.5 million people. (Since then, more than half a million additional Syrian refugees have come to seek shelter in the Hashemite kingdom.)

The high birth rates of the past mean that some 55 percent of Jordanians are under age 25, creating powerful population momentum for the foreseeable future. Jordan's impressive life expectancy is amongst the highest in the Middle East, so that the U.N. estimates that for the next several years, annual population increase in Jordan will be roughly 3.5 percent.

This constitutes the salient context in which to evaluate the present agreement and the implicit supply-side strategy it represents. By the time the new agreement becomes operational, there will be one million additional people in Jordan. This assumes that the Syrian situation does not grow worse and that the refugees are able (or wish to) return home.

The additional 80 million cubic meters of additional water for Jordan that the new arrangement provides is not insignificant. Arguably it will add some 10 percent to overall present production. If the water is entirely directed to the country's domestic sector, the proportional increase will be even more substantial for ordinary citizens. But the improvement will be completely neutralized by the growth in population which will be far more than 10 percent. In other words, Jordan has to run to stay in place.

The situation is hardly different in the other countries, partner to the agreement: the UN estimates that Palestinian and Israeli annual population growth is 2.4 percent and 1.8 percent respectively. Even expanded desalination does not change the burden created by geometric population growth on infrastructure, food security and ecosystems.

This supply-side approach to water management is not unique to Israel and its neighbors. A report released this month by the United Nations Development Program: Water Governance in the Arab Region: Managing Scarcity and Securing the Future points out that the average person in the Arab region accesses one-eighth of the renewable water that the average global citizen enjoys. Given climate-driven precipitation changes, the report anticipates that by the year 2025 water supply in the Arab region will be only 15 percent of what it was in 1960. The report spends over a hundred pages expounding its response: a vision for good governance, involving equity, transparency, accountability and cost-effectiveness.

Nowhere does the proposed strategy address the real issue. In presenting the program in a recent Huffington Post op-ed, the UNDP's regional director for the Arab States team notes that the population of the Arab world tripled from 128 million people in 1970 to over 360 million today. But this is only mentioned in passing as a factor that "exacerbates" shortages -- not as the primary engine of the prevailing scarcity. Nowhere does anyone show the perspicacity or political courage to say the obvious truth. If population levels do not stabilize and even come down, the present shortages will grow worse.

Water managers by their nature are problem solvers and they are used to addressing the symptoms caused by deeper problems. But surely it is time for someone to talk about the real cause of the Mideast water crisis. Government leaders and the agencies that subsidize them need to start by admitting that manufacturing more water has limits and brings with it enormous environmental consequences -- from prodigious greenhouse gas emissions to overpumping and salinization of fresh water sources.

If Middle Eastern leaders are serious about a sustainable water strategy -- they should start by setting sustainable demographic objectives to ensure that demand begins to taper off as soon as possible. The phenomenal success of family planning programs in Iran proves that there is nothing inherent about Islamic society that stands in the way of responsible population policies. Encouraging replacement

level fertility, empowering women and delivering free contraception to all citizens is a far more cost-effective, long-term strategy for solving the Middle East's water shortages than building hugely expensive infrastructure that upsets natural hydrological flows and balances.

"New Israeli-Jordanian-Palestinian Water Agreement Will Not Solve Shortages", 15/12/2013, online at: http://www.huffingtonpost.com/alon-tal/middle-east-water-agreement_b_4450304.html

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❖ World Bank officials confirm support, possibly financially, for trilateral water agreement

Deal, signed earlier this month, includes water "swap" with Jordan, will increase Israel's water sales to PA by 20 million cubic meters annually.

World Bank officials have thrown their support behind the trilateral water sharing agreement Israel, Jordan and the Palestinian Authority signed last week.

They suggested that the organization may be willing to play a financial role in the plans.

"I am pleased that the long-term engagement of the World Bank has facilitated this next step by the three governments, which will enhance water availability and facilitate the development of new water through desalination," Inger Andersen, the World Bank vice president for the Middle East and North Africa Region, said on Wednesday. "I would like to emphasize the World Bank's continuous engagement to help all sides make decisive and historic progress."

On December 9, senior officials from the three governments met at the World Bank headquarters in Washington to sign a memorandum of understanding on water exchanges and sharing. A key component of the agreement is the development of an 80 million cubic meter desalination plant in Aqaba, from which Israel will be able to buy 50 to 60 percent of the water. Jordan would be able to buy an additional 50 million cubic meters of water from Lake Kinneret (the Sea of Galilee) annually – roughly double the current allocation – and Israel would allow for the direct sale of an additional 20 million cubic meters of water from the Mekorot national water company to the PA.

The understanding calls for a 200-kilometer pipeline to carry residual salt brines from the desalination process to the Dead Sea.

On the day of the signing, World Bank officials told The Jerusalem Post that media reports claiming that the institution had agreed to provide a bridge loan for the process were untrue.

"We are very happy to play the facilitator role. We have definitely not agreed to any financing for this," Alexander McPhail, the lead water and sanitation specialist in the World Bank's Water Practice division, said at the time.

Now, a week-and-a-half later, however, a World Bank spokesman explained that following the signing, the bank's teams have began engaging with donors who have signaled serious interest in support the project.

In addition, once the technical studies surrounding the project have been satisfactorily completed, the World Bank Group would consider exploring financial engagement in the project, if requested, the spokesman confirmed.

"Every effort will be made to assist the three governments in moving forward, with the ultimate goal of helping to implement the project," the bank said.

"World Bank officials confirm support, possibly financially, for trilateral water agreement", 19/12/2013, online at: http://www.jpost.com/National-News/World-Bank-officials-confirm-support-possibly-financially-for-trilateral-water-agreement-335587

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❖ Dutch Prime Minister Opposes Water Boycott

Dutch PM Mark Rutte rejects a local water company's boycott of its Israeli counterpart, says it is against government policy.

Dutch Prime Minister Mark Rutte has rejected a local water company's boycott of its Israeli counterpart, *Kol Yisrael* radio reported on Wednesday.

According to the report, Rutte spoke with Prime MinisterBinyamin Netanyahu and clarified that the decision by Vitens, a Dutch water company, to **cut ties** with its Israeli counterpart Mekorot is inconsistent with government policy.

Rutte reportedly clarified that Vitens would continue to work with Mekorot.

The reason cited for last week's decision was Mekorot's presence in areas located beyond the 1949 Armistice lines.

Vitens said it ended its partnership with Mekorot because had come to the conclusion that it was "extremely hard" to work with Mekorot on future projects "because they cannot be taken out of the political context."

The company claimed that the decision to end the Mekorot ties was made after conferring with the Dutch foreign ministry and other "concerned parties", though the Dutch foreign ministry had indicated to Israel that Vitens' decision was an independent one and was not made at the request of the government in the Netherlands.

Israel's Foreign Ministry subsequently **filed a formal complaint** with the Dutch ambassador to Israel over the Vitens boycott.

The Vitens saga came after another issue affected Rutte's visit to Israel last week. The Dutch premier was to inaugurate a Dutch scanner on the Gaza border to verify contents of Hamas exports to the Palestinian Authority (PA) in Judea and Samaria.

However, the inauguration was **put off** after "the Dutch suddenly imposed political conditions, notably on the percentage of merchandise destined for the West Bank or abroad," according to an unnamed Israeli official.

"Dutch Prime Minister Opposes Water Boycott", 19/12/2013, online at:
http://www.israelnationalnews.com/News/News.aspx/175311#.Urat1tKaDPY
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❖ Manmade deprivation: water and sanitation in Gaza

In addition to the political split in Palestine that has been around since 2007, the country has been geographically divided into two parts since the establishment of the State of Israel in 1948. Considering the situation in the Gaza Strip, the water crisis Palestinians face in the West Bank is quite understandable. The water resources in the Gaza Strip are limited. There are 1.7 million people living in Gaza, where annual renewable water resources total 65 million cubic meters and the total area is 365 square kilometers. It should be noted that 1.1 million of these people are refugees who live in camps.

Considering that the population of Gaza was 50,000 in 1948, when the State of Israel was established and the Arab-Israeli War took place, one can easily imagine the pressure on natural resources caused by the forced displacement of Palestinians in 1948 that accompanied the establishment of the State of Israel. As in the West Bank, Israel started to send Israeli settlers to the Gaza Strip after occupation in 1967. The settlers stayed there for 38 years, until 2005. The amount of water consumed by some 3,500 settlers in a year reached 6 million cubic meters. Considering that 1.7 million Palestinians consume 100 million cubic meters of water per year, Israel's exploitation through occupation in the Gaza Strip, where natural resources are already scarce, is clear. The level of the groundwater aquifer in the Gaza Strip decreases by 15-20 centimeters per year due to the overpumping of groundwater, and it has become further salinized due to seawater intrusion.

The main source of water in the Gaza Strip is the groundwater resource, which is located along the Israeli coast and is called the Coastal Aquifer. The renewable yield of this resource is 55-65 million cubic meters per year. However, the Gaza Strip is one of the most densely populated areas of the world. Despite the total area of Gaza being 365 square kilometers, the 1.7 million residents of the area impact all environmental resources. In the Gaza Strip, where 68 percent of the total population are refugees and 79 percent are below the poverty line (less than $2 a day), according to the United Nations Development Programme (UNDP), one cannot expect properly working public services.

A great number of human-related disasters have taken place throughout history. One big example of this is the manmade environmental crisis that took place on Easter Island. Life on the island, which was about to end as a result of the island's resources being used up by locals and also due to the

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consequences of overpopulation, took a final blow with the arrival of the Europeans. The Gaza Strip has been going through a similar situation in the 21st century. A dense population stuck in a small area with no connection to the outside world is the modern example of that disaster that took place on Easter Island centuries ago. The long-term Israeli occupation of the area and the imposition of an intensified blockade on Gaza -- on the pretext that Hamas had taken control -- worsened the humanitarian situation. In addition to Israel, Egypt also oppresses the Gaza Strip. Egypt's policy of pressure on the area was launched during the Hosni Mubarak period, was pursued during the Mohammed Morsi presidency -- he was ousted by a coup d'état -- and continues to be implemented by the current Egyptian administration. As a result of this double pressure, it has become almost impossible for the Gaza population to meet basic needs like water, sanitation and electricity in the Gaza Strip. In addition to the embargo policy, the attacks carried out by Israel further bring the situation in the Gaza Strip into deadlock.

Especially during the Israeli attack that started on Dec. 27, 2008, and that lasted until Jan. 18, 2009, all kinds of infrastructure across the Gaza Strip were targeted, and more than 1,500 people were killed. During the Israeli attacks, water conveyance pipelines and sewage systems, in addition to houses, shops, buildings and electric networks, were purposely targeted. The infrastructure, which was already insufficient, was destroyed as a result of these attacks. The ongoing embargo on construction materials is a big obstacle in particular to developing the infrastructure. Also, the recently increasing fuel problem poses an issue in terms of distributing water to households.

The floods that took place in Gaza last week and the damage caused by the floods should be assessed within the general framework mentioned above. To form an opinion on the issue based on the fact that the Disaster Response Committee affiliated with the Hamas government accused Israel of opening up dams and causing floods in the Gaza Strip would not be helpful in seeing the problem in its entirety. Israel is not only accused of opening up dams. It also did not abide by the responsibilities of an occupying state regulated by international law when it occupied the Gaza Strip between 1967 and 2005. Furthermore, it impeded all kinds of developments through the embargo it imposed afterwards.

“Technical” analyses, which could assess the aforementioned floods as a result of rainfall that had not been seen for a long time, will probably be brought to the agenda. However, even if the latest

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floods were explained by rainfall, there is no way to explain the sewage floods that took place in November. The wastewater flood in Gaza, which stemmed from a sewage pumping station that had been closed due to a diesel fuel problem in November, points out a structural problem. Although Israel is primarily responsible for this problem, Egypt's former and current administrations are also responsible. Besides that, the role of the Hamas administration, which did not buy diesel fuel from Israel, leading to the closure of the pumping station in order to deprive the Palestinian administration in Ramallah of tax revenue, is undeniable.

All parties, and especially the international community, have to strive greatly to remedy the general disaster in the Gaza Strip, which can be seen as the Easter Island of the 21st century. Efforts to lift the embargo imposed on the area should come first. Solving the Palestinian problem, including the recognition of the right for refugees to return to their homes, constitutes the basis for solving the humanitarian and environmental problem in the Gaza Strip.

"Manmade deprivation: water and sanitation in Gaza", 22/12/2013, online at: http://www.todayszaman.com/news-334489-manmade-deprivation-water-and-sanitation-in-gaza.html

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❖ Water, water, everywhere

Jordan, Palestine, and Israel struggle to reap benefits from a groundbreaking water agreement.

The scarcity of water resources and the relative power of countries that share them has long been a hotly contested topic. In a paper published in 2008, Mark Zeitoun and Naho Mirumachi argue that these 'transboundary water interactions' are inherently political processes, determined by broader political conflicts. Nowhere are these processes and conflicts more visible than the Dead Sea to Red Sea project, signed off by Palestine, Israel, and Jordan earlier this week. Whether this cooperative agreement sustains or transforms the conflict it is intended to resolve is a matter not only of opinion, but also, time.

Yaakov Garb, an Israeli environmental and social studies expert at Ben-Gurion University of the Negev, stated to the *New York Times* that he suspects the project is "wrapped up in 'Saving the Dead Sea' clothing" in order to attract international financing. Others argue that Red-to-Dead is more concerned with providing freshwater to a desperate region, and less to do with reversing receding water levels in the Dead Sea. It is this demand for fresh water that has caused evaporation of the Jordan River and the Dead Sea in the first place: waters that flow into the Jordan River and the Sea of Galilee are diverted for consumption. This has caused the amount of water that flows freely to Jordan to decrease over time: A 2011 report by the Indian-based think tank Strategic Foresight Group (SFG) states that even as consumption levels increase rapidly, the annual discharge of Jordan River decreased to 200 cubic metres in 2011, compared to 1,300 cubic metres in 1960. Conversely, the aggressive adoption of desalination plants, coupled with profitable waste-water reuse policies, has meant that per capita usage of fresh water has steadily declined in Israel: approximately 80% of all waste water is recycled in the nation, more than double the rate of any other country in the world.

It is natural that a cumulative decrease in water resources, an absence of water management, and a growing population that creates higher water demand, has culminated in a tense political environment in Jordan as I have arguedelsewhere. As part of the project, approximately 100 million cubic metres of water will be desalinated in Jordan: the majority of water for drinking and irrigation will be

directed to Israel's Arava desert, but, as part of the cooperation, Israel will provide desperately needed water to Jordan's Northern front.

A water shortage for Jordanians could fuel growing instability for the Hashemite regime. Citizens without a fundamental human right are likely to express their dissent, voicing protest both on, and off, the streets. The focus for the Hashemite Kingdom remains two-fold: guaranteeing the fulfilment of domestic water needs to improve food security in the nation, and contributing to political stability through equitable sharing of water resources within the wider region.

Despite current challenges, better water management holds possibilities for improved cooperation and trust-building in the future. Potential benefits are clear; indeed, overall welfare of the three participating states is vitally linked by dependence on this shared resource. Today, Israelis consume a daily average of 350 litres of water per capita, while Jordanians consume roughly 60 litres, and Palestinians, only about 30 litres. In the future, it is hoped that countries along the Jordan River establish a daily per-capita water usage of under 200 litres.

Current negotiations over water management rely on provisional figures from the Oslo Accords of the early 1990s, even though studies show that water resources have depleted by 7% since that time. In the past, the lack of confidence between Israelis and Palestinians has been a crucial impediment to improving water resource management between the three nations. It is clear that a paradigm shift is needed to change how these partners view the politics at the crux of their water agreements. Perhaps, the Red-to-Dead deal will provide it.

"Water, water, everywhere", 16/12/2013, online at: http://www.opendemocracy.net/arab-awakening/nikita-malik/water-water-everywhere

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❖ Israel-Jordan water agreement not worth the hype

A $400 million agreement to create a desalination plant in Aqaba and to pump brine water to the Dead Sea is a far cry from what is being hyped by Israel as an "historic agreement."

The memorandum of understanding signed at the World Bank on Dec. 9 by Israeli, Palestinian and Jordanian officials calls for the creation of a desalination plant in Aqaba that would supply clean water to Aqaba and Eilat and pump sea water into the shrinking Dead Sea. In return, Israel would give Jordan 50 million cubic meters of water from the Sea of Galilee free of charge and sell to the Palestinians 20 million to 30 million cubic meters of water. Jordan would supply Eilat with 30 million cubic meters of water and make the same amount available to its own southern population.

Israeli Minister of Energy and Water Silvan Shalom, hailing the agreement as "historic," said it reflected what he called unprecedented regional cooperation. His Palestinian counterpart, Shaddad Attili, said that the Palestinian government supports the Jordanian project, which would for the first time free up a decent quantity of water for supply to Palestine outside the framework of the Oslo Accords. This largely Jordanian endeavor is a far cry from the multibillion dollar Red Sea-Dead Sea channel that has been part of the discussions steered by the World Bank.

Friends of the Earth Middle East (FoEME), a regional environmental organization, has slammed the agreement as insufficient and lacking any real environmental impact studies. In particular, there is concern about mixing saltwater with the Dead Sea's water, potentially resulting in an extremely bad odor. What is most surprising is that the agreement contradicts the recommendations made by experts as well as the World Bank itself, as pointed out by FoEME.

> FoEME is now calling on the World Bank to announce publicly that unless the Israeli and Jordanian governments halt projects which preempt the outcome of the feasibility study and social impact assessment, the World Bank will withdraw from the study process. Plans to commence development of a Red Sea-Dead Sea water conveyance before the potentially serious social and environmental impacts of such an action are understood not only render the World Bank's study meaningless, but are also likely to cause untold environmental destruction. Such action is irresponsible and amounts to a slap in the face to the World Bank and the

international community which have committed resources to studying (albeit as part of a somewhat flawed process) the feasibility and anticipated impacts of the water conveyance.

While the potential environmental problems of the water pipeline have been repeatedly emphasized, many have failed to deal with the cause of the water problem: Israel's theft of water. The simple fact is that the dangerous decline in the the Dead Sea's water level is due to the rerouting of Jordan River waters — which flow into the sea — for use almost exclusively by Israel. The Israeli national water carrier's diversion of Jordan River water to the Negev desert deprives the Dead Sea of a steady supply of water. The Israelis' actions have been dubbed water "theft" by the Palestinians, experts and major international media outlets.

The hype this latest agreement has received in Israel, where it has been hailed as a fulfillment of the dream of Zionist founder Theodore Herzl, is far from the reality. It is little more than a Jordanian desalination plant in Aqaba and a 112-kilometer underground pipeline that would help lessen the decline of the water level of the Dead Sea with questionable environmental consequences.

"Israel-Jordan water agreement not worth the hype", 16/12/2013, online at: http://www.al-monitor.com/pulse/originals/2013/12/aqaba-jordan-desalination-water-israel-palestine.html

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❖ Water-sharing accord won't solve overpopulation issue

Mideast observers were happily surprised to hear about a water-sharing agreement signed at the World Bank headquarters earlier this month between the Israeli, Jordanian and Palestinian governments.

Amid the media fanfare, it is important to distill what this new accord delivers and what it doesn't.

The centerpiece of the agreement is a new desalination plant to be established on the Red Sea in Aqaba, Jordan, that will provide water for the city and its vicinity, including the neighboring Israeli city of Eilat. In addition, an estimated 100 million liters of the high-salt brine produced by the desalination plant is to be pumped annually via a conduit in Jordan and discharged into the Dead Sea, which has been shrinking steadily for decades. Farther north, Israel agreed to sell some 80 billion liters of water each year from the Sea of Galilee to the Jordanians and Palestinians.

The projected price tag for the entire initiative — $400 million — is a fraction of a much more ambitious, multibillion program to refill the Dead Sea that recently was endorsed by the World Bank.

As the first new agreement in many years that coordinates natural resource use between Israel and its neighbors, its very existence constitutes good news — as does the introduction of additional desalinated water into an increasingly parched region.

Yet, the 100 million liters of brine that is to reach the Dead Sea is only a 10th of the 1 billion liters that used to reach it naturally, flowing via the River Jordan. (During the past 50 years, most of the waters were diverted by Syria, Israel and Jordan.) This agreement in no way saves the Dead Sea from dying. The unique saline lake, located at the lowest place on Earth, will continue its alarming retreat each year with or without the new pipeline.

The essence of the agreement, therefore, involves providing additional water to Jordanian and Palestinian communities to ameliorate their chronic shortages. House-holds throughout local cities typically only enjoy water delivery a few times a week.

Any relief will be welcome to residents who have watched their per capita allocations steadily erode. But it is important to temper enthusiasm with realism. Like the other water-supply strategies recently proposed in the Middle East, this one will not provide meaningful improvement, because the relentless increase in population undermines any real hope for progress.

For example, in 2009 Jordan reported that its citizens had access to only 145,000 liters of water per year, making the country one of the most water scarce in the world. Even without hundreds of thousands of refugees from Iraq, and another half-million from Syria, Jordan's natural population growth rate is extremely high, averaging six children per family. Between 1980 and 2010, the population grew from 2.2 million to 6.5 million people.

This constitutes the salient context in which to evaluate the present agreement and the implicit supply-side strategy it represents. By the time the new agreement becomes operational, there will be 1 million additional people in Jordan — more if the Syrian refugees do not return home.

In other words, Jordan has to run to stay in place.

The situation is hardly different in the other countries partner to the agreement. The United Nations estimates that Palestinian and Israeli annual population growth is 2.4 percent and 1.8 percent, respectively. Even expanded desalination does not change the burden created by geometric population growth on infrastructure, food security and ecosystems.

This supply-side approach to water management is not unique to Israel and its neighbors. A report released this month by the United Nations Development Program points out that the average person in the Arab region accesses one-eighth of the renewable water that the average global citizen enjoys.

Nowhere does the agreement address the real issue: If population levels do not stabilize and even come down, the shortages will grow worse. Government leaders and the agencies that subsidize them need to admit that manufacturing more water has limits and brings with it enormous environmental consequences, from prodigious greenhouse gas emissions to overpumping and salinization of fresh water sources.

If Middle Eastern leaders are serious about a sustainable water strategy, they should start by setting sustainable demographic objectives to ensure that demand tapers off as soon as possible. The phenomenal success of family planning programs in Iran proves that there is nothing inherent about Islamic society that prevents responsible population policies.

Encouraging replacement-level fertility, empowering women and delivering free contraception to all citizens is a far more cost-effective, long-term strategy for solving the Middle East's water shortages than building hugely expensive infrastructure that upsets natural hydrological flows and balances.

Alon Tal of Ben-Gurion University of the Negev is a visiting professor at the Stanford Center for Conservation Biology. He is the past chairman of Israel's Green Party and founder of the Arava Institute for Environmental Studies.

"Water-sharing accord won't solve overpopulation issue", 19/12/2013, online at: http://www.jweekly.com/article/full/70408/water-sharing-accord-wont-solve-overpopulation-issue/

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❖ How Hamas used the weather to defame Israel

Islamic government falsely claims Israel flooded Gaza, by opening dams that don't exist

Even the weather is fair game in Hamas's war of words against Israel. A fabricated claim that Israel intentionally flooded the Gaza Strip during the worst storm to hit the region in decades has made headlines in Middle Eastern and international media over the past week.

The Gaza Strip was one of the areas most affected by the storm Alexa. Torrential rain caused widespread flooding, forcing some 40,000 residents to evacuate their homes as rescuers used rowboats to assist stranded civilians. UNRWA, a UN agency tasked with assisting Palestinian refugees, described parts of northern Gaza Strip as a disaster zone.

Rainfall of 260 millimeters (10.23 inches) was documented in the Gaza area between December 11 and 13, comprising a staggering 60 percent of the annual average for the region. According to Israel's Water Authority, the flow in Shikma River — emanating in the Hebron hills and pouring into the Mediterranean Sea north of the Gaza Strip — broke a 50-year record.

But force majeure would not suffice for Gaza's Hamas authorities as an explanation for the population's suffering. Hamas's Disaster Response Committee chairman Yasser Shanti told journalists on Friday that Israel opened dams just east of the Gaza Strip, causing a flood in the area of Moghraqa near the town of Deir El-Balah.

A variation on that claim was made by Civil Defense spokesman Muhammad Al-Maidana, who told the Palestinian daily Al-Quds that Israel had opened sewage canals east of the Gaza Strip, "exacerbating the crisis and raising the water level, causing homes to be submerged."

Al-Majd, a Palestinian security-oriented website, went so far as to claim that Israel opened the dams in order to expose Hamas tunnels leading into Israel and impose an unbearable financial burden on Gaza's government. "For Gaza to drown is an old Zionist dream," the site wrote in a report.

Israel denied Hamas's claims out of hand.

"The allegation of [Israel] opening dams and flooding the Gaza Strip is baseless and false," Uri Schor, a spokesman for Israel's Water Authority told The Times of Israel in an email correspondence Wednesday. No dams even exist in the area, he added, noting that water reservoirs have overflowed across the country, causing flooding.

"The opposite is true: due to the damage caused by the storm — which affected all neighboring countries and not only the Palestinian Authority — Israel responded to a special appeal conveyed through the UN, transferring four high-power pumps to the Gaza Strip intended to help residents remove water from flooded areas."

But Hamas's false reports had already run their course. Articles claiming Israel intentionally flooded Gaza went viral on news channels, blogs, and social media.

Israel opens dams to flood Gaza, forcing evacuations – See more at:http://t.co/fxuolknw3S
— Lucy Warin (@lucywarin) December 18, 2013

Moussa Abu Marzouk, deputy head of Hamas's political bureau, acknowledged Israel's assistance to Gaza, claiming that Israel was acting in a contradictory manner with regards to the crisis.

"The Zionists, of course, have taken advantage of the situation, sending some pumps and supplies which they had deprived the besieged Gaza Strip of," the Hamas official wrote on his Facebook page Sunday.

"Later, the occupation forces opened the Wadi Salqa dams to sink dozens of Palestinian homes in the central region of the Gaza Strip, thereby sending two contradictory messages!"

A spokesman for the Israeli Coordinator of Government Activities in the Territories told The Times of Israel in an email reply that rumors of Israel flooding Gaza "repeat themselves every year when Gaza is drenched in rain."

Schor, the spokesman for Israel's Water Authority, said it was regrettable that Israel's "immediate and professional" assistance to the Gaza Strip was not adequately reported by Palestinian media.

"One can assume that the considerations motivating the Palestinian side [on this matter] were political rather than professional," he wrote.

"How Hamas used the weather to defame Israel", 18/12/2013, online at: http://www.timesofisrael.com/how-hamas-used-the-weather-to-defame-israel/

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❖ Sea of Galilee rises 10 cm after weekend storm

Melting snow from Golan and Upper Galilee could raise water levels further, meteorologists say
In one of the few pieces of good news to come out of the unprecedented storm that washed over Israel this past weekend, the country's largest source of freshwater rose 10 centimeters since last Wednesday, the Israel Water Authority reported Sunday.

The Sea of Galilee's water level now stands at 211.3 meters below sea level, about 2.5 meters shy of the level at which the sluices would be opened to let water run down into the Jordan River and thus prevent flooding in Tiberias. Water levels are expected rise further in the coming days due to melting snow in the Golan Heights and the Upper Galilee.

Prior to the storm, the country had been experiencing one of the driest winters in decades, but thanks to rains from the previous winter the waters of the Sea of Galilee were still about a meter higher than at the same time last year, according to figures released by the Israel Meteorological Service on December 1.

Israel uses about 2 billion cubic meters of water a year, of which 600 million cubic meters come from desalination and a further 400 million are recycled waste water used in agriculture. The rest comes from annual rainfall that rushes through rivers and streams into the Sea of Galilee and seeps into the coastal and mountain aquifers. In accordance with various agreements, Israel also provides 100 million cubic meters of water to the Palestinian Authority and a further 70 million cubic meters to Jordan.

The weekend storm, deemed a "once-in-a-century" phenomenon by Prime Minister Benjamin Netanyahu, dropped 40-60 centimeters of snow in Jerusalem and between 60 centimeters and one meter of snow in the Golan, closing roads and crippling public transportation in parts of the country. Road 1 from Tel Aviv to Jerusalem only opened Sunday afternoon, while the capital's light rail was still out of service and authorities were still advising residents against driving on the city's icy roads.

Four people died over the weekend due to weather-related incidents.

"Sea of Galilee rises 10 cm after weekend storm", 15/12/2013, online at: http://www.timesofisrael.com/sea-of-galilee-rises-10-cm-after-weekend-storm/

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❖ Parched Jordan faces water crisis as Syrian refugees flood in

AMMAN (Thomson Reuters Foundation) - A flood of Syrian refugees is threatening to turn Jordan's chronic water shortage into a crisis, stoking tension among Jordanians already resentful of what they see as Syria's unfair exploitation of shared water supplies.

Jordan has long accused neighbouring Syria of ignoring regional water sharing agreements, leaving most of the kingdom a virtual desert, but an influx of refugees fleeing Syria's raging civil war is now straining its scant water resources to breaking point.

"First they (the Syrian government) take our water, then they force their people to flee to our country," said Omar Khalil, a Jordanian farmer from the northern city of Irbid, near the border with Syria.

"Hope things there will change for the better for us and the Syrian people … or may God help us all," he added.

The Jordanian government's poor management of its dwindling water supplies has exacerbated the problem, say experts, who doubt the long-term viability and efficiency of state plans to boost water flows.

The Yarmouk River is the main tributary to the Jordan River, which forms the border between Jordan and Syria then Jordan and Israel. Experts say Syrian dam building on the Yarmouk has sapped flows to Jordan, contravening a 1953 water sharing deal.

Jordan, Syria, Lebanon and Israel agreed in principle to the United States-backed Johnston Plan, under which Jordan was allotted 375 million cubic metres (mcm) per year, about enough to fill 150,000 Olympic-sized swimming pools.

However, the deal was never ratified and Jordan's allocation was subsequently reduced to 200 mcm by mutual agreement. Yet it receives no more than a quarter of that amount.

"Syria's building of dams on the Yarmouk River inhibit the flow of water to Jordan, and hinders hopes of sharing the region's water resources," hydrologist and Jordanian Royal Water Commission member Elias Salameh said.

"In the meantime Syria has built 20 weirs along the Yarmouk's sources, taking in more than 60 percent of the total," said Salameh.

While Jordanian authorities struggle to devise ways to conserve and increase water supplies, the number of Syrian refugees in the kingdom has swelled to an estimated 700,000 people, roughly 10 percent of Jordan's population.

Officials expect that number to hit one million by the end of the year.

DANGEROUS SITUATION

Jordanians have been subjected to water rationing rules since the 1980s, and use only a fraction of the water enjoyed by their neighbours in the region – an estimated 70 litres a day for the average Jordanian, compared to 840 litres a day in Kuwait and 280 litres a day in Israel.

Yet that has not stopped the kingdom of seven million people becoming the world's third poorest country in terms of water resources, the influx of Syrian refugees bouncing the country up from fourth place, Jordanian officials say.

Making matters worse is the threat posed to underground aquifers by the sprawling Zaatari camp in northern Jordan, which houses more than 120,000 Syrian refugees.

The desert refugee camp is the world's second largest, behind Dadaab in eastern Kenya, and has become Jordan's fourth largest city.

Water and Irrigation Ministry Secretary General Bassem Tilfah this month said a study showed that sewage and waste from the camp threatened underground water sources nearby.

"The situation is becoming increasingly dangerous. We have floated bids to build water desalination plants to deal with this crisis before it's too late," he said.

"The infrastructure simply can't handle the pressure," he added.

Partly in response to growing resentment among Jordanians, U.N. aid workers last year started a programme to educate Syrian refugees accustomed to plentiful water supplies in their homeland about the scarcity of water in Jordan, and the importance of reducing waste.

WATER THEFT

In a loudly trumpeted bid to help alleviate the problem, the Jordanian government this summer inaugurated a $1 billion pipeline to carry water from the country's ancient Disi aquifer in the south to Amman in the north and later to other Jordanian cities.

But the 325 km pipeline is a short term solution, and water experts question the project's efficiency. The pipeline is expected to boost water supplies by 100 mcm a year, but only for 10 years, and even within that time frame flows are unlikely to keep pace with population growth.

"With the population increase, the per capita share will decrease … It's positive effect will last until 2020, so we have to look for other alternative sources of water," said Ministry of Water and Irrigation spokesman Adnan Zoubi.

Some experts say the government would do better to crack down on the rampant drilling of illegal water wells before embarking on more grand infrastructure projects.

The government spent millions of dollars in the past two years to revamp the country's water distribution network, but found that most of the water that had vanished before reaching customers had been stolen rather than lost through leaks.

The theft amounts to about six percent of Jordan's annual water supply.

"The police are sometimes either not interfering to enforce the law or are simply unable. They sometimes come under tribal pressure and influence," environmentalist Bater Wardam said.

Jordan's battle to quench the nation's thirst will be an ongoing one, and water experts and environmentalists are keen to see greener and more efficient solutions than the Disi pipeline.

Salameh said a new city should have been considered close to the Disi aquifer, creating new opportunities and jobs for the southern region, rather than pump the water hundreds of kilometres north, incurring expensive long-term pipeline maintenance costs.

Architect and conservationist Ammar Khammash proposed a different solution, which involved building dams around Amman to catch rainwater to recharge the hilltop city's ancient aquifers.

"I think I'd rather look at the simpler, whispering intelligence of the landscape below Amman," he said.

"Parched Jordan faces water crisis as Syrian refugees flood in", 16/12/2013, online at: http://www.trust.org/item/20131216173028-zteuy/?source=hptop

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❖ Water Issues Can Play a Leading Role in the Middle East Peace Process

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

The signing of a Memorandum of Understanding last week in Washington DC, where Water Ministers from Jordan, Israel and Palestinian Authority declared a common intent to move forward on a water exchange and act towards "saving the Dead Sea," received extensive worldwide media coverage. Even US Secretary of State John Kerry congratulated the parties on the effort.

The proposed conduit from the Red Sea or the Mediterranean Sea to the Dead Sea has attracted tremendous media attention for decades. Such grandiose ideas capture the imagination of the public as evidence of humankind's ability to literally change the face of the planet. In no less dramatic ways, Middle East water issues often make the front page of the world's press under the title of "Water Wars." Despite the rhetoric, research undertaken by Prof. Aaron Wolf of Oregon State University has established that the shared nature of international cross border waterways overwhelmingly leads to differing levels of cooperation rather than military conflict. Other researchers have questioned whether what might look like cooperation over water is little more than domination of one side, the water hegemon, over her neighbors.

Water can plan a catalyst role in the Middle East peace process. Objectives must be well defined, advancing water equity must be a key outcome, and decisions must be taken on the basis of sound economic and environmental considerations. The Memorandum of Understanding signed last week is a clear case in point.

The idea of a limited water exchange between Israel and Jordan in principle makes good economic, environmental and political sense. To meet the growing needs of domestic water in Jordan's capital city of Amman, the Sea of Galilee in Israel is the closest source of potential available water supply. Given that a pipeline from the Sea of Galilee already links Israel with Jordan's capital, selling a limited quantity—50 million cubic meters annually—of additional water to Amman is a good economic deal for the Jordanian public. It's better than any other alternative.

Eilat and the Israeli side of the Arava Desert also need more water, and given that they are not connected to the Israeli national water network, if Jordan would build a desalination plant in Aqaba

to meet growing needs there, and also sell the 50 million cubic meters annually of water needed in Eilat, then Israel would benefit. It would avoid the financial burden and environmental damage associated with extending the national water network several hundred kilometers south.

Problems occur when a well-defined idea based on sound analysis is stretched to achieve additional unrealistic and infeasible goals. In the case of Israel and Palestine, the proposal is contrary to principles of equity. Instead of declaring a plan for a water exchange, the ministers meeting in Washington announced the launch of the Red Dead Conduit that they claimed would provide "plentiful water for all and save the Dead Sea.'"

Instead of sustainably disposing the emitted brine from the proposed desalination plant in Aqaba near source, as occurs on the Mediterranean and elsewhere, the plan would pump it about 200 kilometers north to the Dead Sea to supposedly "save the Dead Sea."

The cost of building this pipeline is estimated at $400 million. Linking the desalination plant proposed for Aqaba with a pipeline to carry away the brine 200 kilometers to the Dead Sea makes the cost of desalination unaffordable. That is why Israel and Jordan are labeling this project as one that saves the Dead Sea — so the international community might pay the cost of the pipeline. Brine in the Dead Sea, according to the World Bank studies, is likely to only lead to the further demise of the Dead Sea (growth of algae and gypsum altering the very nature of the Dead Sea), and the quantity of brine in this project, at only 100 million cubic meters, will do next to nothing in preventing the continued drop in Dead Sea water levels. Furthermore, the additional operational cost of having to pay for energy and running costs of pumping brine 200 kilometers is estimated to increase the cost of desalinated water by 30 percent. Desalination costs on the Mediterranean are presently as low as 57 cents a cubic meter, while Aqaba-Dead Sea pipeline costs are estimated at close to a dollar.

Water could play a catalyst role in the peace process if Jordan and Israel were to move forward on the water exchange—but if delinked from the burden of the Red Dead. Palestinians need to receive their rightful share of shared Israeli Palestinian water and not be asked to buy more water from Israel. Because of Israel's leadership in both wastewater reuse and desalination on the Mediterranean Sea, Israel has excess water. Sharing water more fairly with Palestine comes at low political cost for Israel as no sector will be asked to cut back their water usage. For the Palestinians, few measures could

improve the lives of every resident than a more equitable share of water. Low political cost for Israel and high political gain for Palestine means low-hanging political fruit that can build confidence between the parties to move forward on the other final status issues of the peace process.

As for the Dead Sea, the sea will only be saved if the political will exists to take on the root causes that lead to its demise in the first place: Over-extraction of Jordan River waters and the failure to charge the mineral extraction industry for the Dead Sea water that they unsustainably exploit. Those are the two issues that need to be taken on to save, or stabilize, the Dead Sea—while preserving its unique features as a natural spa.

"Water Issues Can Play a Leading Role in the Middle East Peace Process", 16/12/2013, online at: http://www.trust.org/item/20131216154511-axhon/?source=hppartner

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❖ Storm exacerbates sewage crisis in Gaza

OCCUPIED GAZA STRIP (IRIN) - Hamdi al-Shami, 54, woke up in the densely populatedZaytoun area of Gaza City on 11 December to find raw sewage flowing down his street at a height of more than two meters. It was just one of several sewage overflows to occur in his neighborhood over the last five weeks.

On 13 November, more than 35,000 cubic meters of raw sewage overflowed when the Zaytoun pumping station failed, affecting 3,000 nearby residents. Just as the mess was being cleaned up, the area was again inundated — this time with approximately twice as much waste — when heavy rains fell over the Gaza Strip between 11 and 15 December.

In Gaza City, one of the worst-hit areas, the municipality estimated that hundreds of thousands of cubic meters of sewage and rainwater overflowed from pumping stations and manholes, flooding streets and homes.

"It was horrible. We lost many things when the sewage came from everywhere around us — the doors, manholes and sinks. This cannot be forgotten," said al-Shami, speaking about November's flooding.

That flooding was attributed to a combination of factors: power outages disrupting the city's sewage pumps and a shortage in capacity, spare parts and facilities because of a seven-year blockade against Gaza.

At the time, residents were told that a rapidly-established power connection to the Israeli grid would prevent future problems. But with the recent rainfall, the situation in al-Shami's neighborhood has only worsened.

Stranded

He was stranded amid water and sewage for days.

"It hit us again, but harder this time," al-Shami said on 12 December. "With every passing hour, the water level was rising. It was incredible. We called rescue teams to help us before it is too late. It was not only the electricity issue; we were also cut off from basic needs and clean water."

With power outages and pump shortages, the Municipality of Gaza estimated it would take up to two weeks to drain the water and clean the sewage off the streets. It has brought in water pumps from other areas and expanded the artificial pond at Nafaq Street to speed up the process.

According to the UN Office for Coordination of Humanitarian Affairs (OCHA), the floodingaffected 21,000 persons, including thousands who were displaced and sought shelter for days in schools or with relatives. Two persons died and 108 were injured, mainly in southern Gaza, OCHA said, in the worst storm the Middle East has seen in decades.
OCHA said Gaza received 75 percent of its average seasonal rainfall in those four days. Other estimates put the figure even higher, at about 111 million meters, or 92 percent of the average seasonal rainfall.

Health concerns rise

In recent days, people have gradually been returning to their damaged homes, but the storm has exacerbated pre-existing water, sanitation and hygiene (WASH) concerns caused by fuel and electricity shortages.
Ahmed Yaqubi, a water resources consultant at the Palestinian Water Authority, said that Gaza facilities were not able to handle such large quantities of rainwater. Continuous power and fuel shortages hindered efforts to pump water, leading to flooding in several areas — especially in Gaza City.
"Subsequently, recent flooding has had impacts on environment, health and economy in Gaza. For example, rainwater mixed continuously with sewage water, and a possible sanitation issue is raised because of that," Yaqubi said.

Aid agencies are assessing the needs and appealing to donors for support.

Among the most immediate needs, according to the Coastal Municipalities Water Utility and the Municipality of Gaza, are mobile water pumps and power generators — a number of which were damaged during last week's storm — in addition to fuel and spare parts for repairs and maintenance. There is also a long-term need for expanded and more developed water facilities.

An annual United Nations appeal for humanitarian support to Gaza is funded at around 63 percent ($252 million has been received of a total request of $401 million), with the WASH sector notably underfunded, at around 31 percent of targeted funds.

Living on a street next to the local sewage pumping station had not been in problem for al-Shami until last month, when an acute shortage of electricity in the Gaza Strip — caused by the closure of Gaza's only power plant — pushed the territory's 291 water and sewage treatment facilities onto backup generators. Sewage overflows have since been reported in several areas, and risks of overflow were high in others.

OCHA called the situation "one of the most serious energy crises in recent years, with potentially serious humanitarian ramifications" ("Gaza fuel crisis situation report," 26 November 2013).
Amnesty International said the fuel shortages and subsequent power cuts in Gaza were increasing "the risk of a massive public health crisis" ("Gaza power crisis has compounded blockade's assault on human dignity," 1 December 2013).

Tunnels closed

After Egyptian authorities closed down most of the tunnels that had allowed the entry of cheap fuel into Gaza over recent months, the power plant struggled to obtain fuel at an affordable price. It closed on 1 November and reopened 45 days later after donor funding. The running costs of private generators also shot up.
Some fuel continues to enter Gaza through the remaining tunnels, but estimates in November put the figure at less than 20,000 liters per week, down from nearly a million liters per day prior to June.

Power cuts over the last seven weeks have regularly lasted 12 to 16 hours each day, leaving many of Gaza's almost 1.7 million residents without access to basic clean water, sanitation and hygiene, say aid agencies and human rights groups.

In addition to overflowing in the streets, sewage is being dumped into the sea in far greater quantities than before, and in lagoons and open channels. Even before the power crisis, 90 million liters of raw or partially treated sewage was being dumped in the sea daily, according to a United Nations report ("Gaza in 2020: A liveable place," August 2012 [PDF]).

The Turkish government agreed at the end of November to donate $850,000 to pay for four months' worth of fuel to run hospital and water treatment plant generators, but that has not yet succeeded in stopping the sewage overflows, which have been aggravated by heavy rains.

In response to the recent storm, Qatar donated $10 million for the fuel needed to operate the power plant for one month, allowing it to re-open in mid-December. The plant has been gradually returning to its standard schedule, which, under normal circumstances, includes an eight-hour cut that shifts from area to area.

Struggling

The health risks are a concern to Ashraf Bargout, also a resident of Gaza City's Zaytoun area, who has seen his children fall into the dirty water several times. He is struggling to clean it up.

"Why does no one answer our calls to solve this issue once and for all? We don't want to see our houses flooded, or our children drowning or becoming sick," Bargout said.

When the sewage flows down the streets, he sends his children away to stay with relatives.

"Does the world wait for a catastrophe to happen before moving? We fear the worst for our families. Look around and see how our children can live or survive, or how our life can be normal, with a flood."

The Coastal Municipalities Water Utility urged international donors to support efforts to help Palestinians in Gaza during winter. Staff say they are trying to fix broken equipment but that spare parts are hard to come by because of the difficulty of moving goods from Israel into Gaza. They have started distributing some fuel to municipalities to run the most important services.

And the situation could yet worsen.

"It is the beginning of the season and more waves are expected to come. We need an urgent action to avoid further issues," said Yaqubi of the Palestinian Water Authority.

A strategic vision should be developed to deal with such situations, he said, including storm water harvesting projects, such as digging roadside wells and creating collection ponds that would store extra water for the aquifer, in addition to continuously maintaining and cleaning the drainage system.

"Ironic"

"Sewage is not our only problem," said Bargout. "Our house receives water for just a few hours every two to three days. How ironic is that? While we're waiting for water from the tap, we receive the sewage water from the sink and everywhere."

Before the storm, due to the power crisis, only 15 percent of Gaza's population received water for domestic use daily. Twenty percent received it every two days, 25 percent every four days, and 40 percent every three days. When the water comes on, it is generally just for five to six hours.

The 25 small-scale desalination units used to provide water to approximately 160,000 Palestinians in Gaza are also affected by the fuel shortages; as a result, their production dropped by 75 percent.

Water is a delicate issue in Gaza, which has seen increasing pollution of the main aquifer through wastewater and seawater intrusion.

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The Palestinian Non-Governmental Organizations Network (PNGO) has blamed the Israeli blockade policies, as well as the Palestinian-led administrations in Gaza and the occupiedWest Bank. "Both governments in Ramallah and Gaza have failed to take any effective steps to overcome this crisis and its consequences, and accordingly all daily basic services needed by the population have disastrously deteriorated," said the network.

Amnesty International demanded that Israel immediately lift its blockade on the Gaza Strip to allow the delivery of fuel and other essential supplies into the territory without restrictions.

"Since June 2007, when the Israeli blockade was tightened, Gaza's energy, water and sanitation infrastructure has been inadequate to fulfill the basic rights of its inhabitants. They were already poor due to prior Israeli restrictions and decades of neglect," the organization said.

It also called on the Egyptian authorities to facilitate the construction of new power lines to increase the electricity supply to the southern Gaza Strip. It said Palestinian and Israeli authorities must work together to find a sustainable solution to the fuel crisis.

Meanwhile, al-Shami said he was undertaking additional precautions to prevent further flooding into his house.

"No one knows what will happen later," he said.

"Storm exacerbates sewage crisis in Gaza", 20/12/2013, online at: http://electronicintifada.net/content/storm-exacerbates-sewage-crisis-gaza/13027

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❖ Powerful storm and power shortages fill Gaza with waste water

GAZA, 19 December 2013 (IRIN) - Hamdi Al Shami, 54, woke up in the highly populated Zeitoun area of Gaza City, on 11 December, to find raw sewage flowing down his street at a height of more than 2m. It was just one of several sewage overflows to occur in his neighbourhood over the last five weeks.

On 13 November, more than 35,000 cubic metres of raw sewage overflowed when the Zeitoun pumping station failed, affecting 3,000 nearby residents. Just as the mess was being cleaned up, the area was again inundated - this time with approximately twice as much waste - when heavy rains fell over the Gaza Strip between 11 and 15 December. In Gaza City, one of the worst-hit areas, the municipality estimated that hundreds of thousands of cubic metres of sewage and rainwater overflowed from pumping stations and manholes, flooding streets and homes.

“It was horrible. We lost many things when the sewage came from everywhere around us - the doors, manholes and sinks. This cannot be forgotten,” said Al Shami, speaking about November’s flooding.

That flooding was attributed to a combination of factors: power outages disrupting the city’s sewage pumps and a shortage in capacity, spare parts and facilities because of a seven-year blockade against Gaza. At the time, residents were told that a rapidly established power connection to the Israeli grid would prevent future problems. But with the recent rainfall, the situation in Al Shami’s neighbourhood has only worsened. He was stranded amid water and sewage for days.

“It hit us again, but harder this time," Al Shami said on 12 December. "With every passing hour, the water level was rising. It was incredible. We called rescue teams to help us before it is too late.

"It was not only the electricity issue; we were also cut off from basic needs and clean water," he added.

With power outages and pump shortages, the Municipality of Gaza estimated it would take up to two weeks to drain the water and clean the sewage off the streets. It has brought in water pumps from other areas and expanded the artificial pond at Nafaq St. to speed up the process.

According to the UN Office for Coordination of Humanitarian Affairs (OCHA), the flooding affected 21,000 people, including thousands who were displaced and sought shelter for days in schools or with relatives. Two people died and 108 were injured, mainly in southern Gaza, OCHA said, in the worst storm the Middle East has seen in decades.

OCHA said Gaza received 75 percent of its average seasonal rainfall in those four days. The Ministry

of Agriculture's estimate put the figure even higher, at about 111,000,000 metres, or 92 percent of average seasonal rainfall.

Humanitarian response

In recent days, people have gradually been returning to their damaged homes, but the storm has exacerbated pre-existing water, sanitation and hygiene (WASH) concerns caused by fuel and electricity shortages.

Ahmed Yaqubi, a water resources consultant at the Palestinian Water Authority, told IRIN that Gaza facilities were not able to handle such large quantities of rain water. Continuous power and fuel shortages hindered efforts to pump water, leading to flooding in several areas, especially in Gaza City.

“Subsequently, recent flooding has had impacts on environment, health and economy in Gaza. For example, rain water mixed continuously with sewage water, and a possible sanitation issue is raised because of that," Yaqubi said.

Aid agencies are assessing the needs and appealing to donors for support.

Among the most immediate needs, according to the Coastal Municipalities Water Utility (CMWU) and the Municipality of Gaza, are mobile water pumps and power generators - a number of which were damaged during last week’s storm - in addition to fuel and spare parts for repairs and maintenance. There is also a long-term need for expanded and more developed water facilities.

This year’s Consolidated Appeals Process for humanitarian support is funded at around 63 percent ($252 million has been received of a total request of $401 million), with the WASH sector notably underfunded, at around 31 percent of targeted funds.

Power shortage

Living on a street next to the local sewage pumping station had not been in problem for Al Shami until last month, when an acute shortage of electricity in the Gaza Strip - caused by the closure of Gaza’s only power plant - pushed the territory’s 291 water and sewage treatment facilities onto backup generators. Sewage overflows have since been reported in several areas, and risks of overflow were high in others.

OCHA called the situation “one the most serious energy crises in recent years, with potentially serious humanitarian ramifications”.

Human Rights Watch said the fuel shortages and subsequent power cuts in Gaza were increasing "the risk of a massive public health crisis".

After Egyptian authorities closed down most of the tunnels that had allowed the smuggling of cheap fuel into Gaza - part of a clampdown on militant activity in Sinai - the power plant struggled to obtain fuel at an affordable price. It closed on 1 November and reopened 45 days later after donor funding. The running costs of private generators also shot up.

Some fuel continues to enter Gaza through the remaining tunnels, but estimates in November put the figure at less than 20,000 litres per week, down from nearly a million litres per day prior to June.

Power cuts over the last seven weeks have regularly lasted 12 to 16 hours each day, leaving many of Gaza's 1.7 million residents without access to basic clean water, sanitation and hygiene, say aid agencies and human rights groups.

In addition to overflowing in the streets, sewage is being dumped into the sea in far greater quantities than before, and in lagoons and open channels. (Even before the power crisis, 90 million litres of raw or partially treated sewage was being dumped in the sea daily.)

The Turkish government agreed at the end of November to donate US$850,000 to pay for four months' worth of fuel to run hospital and water treatment plant generators, but that has not yet succeeded in stopping the sewage overflows, which have been aggravated by heavy rains.

In response to the recent storm, Qatar donated $10 million for the fuel needed to operate the power plant for one month, allowing it to re-open in mid-December. The plant has been gradually returning to its standard schedule, which, under normal circumstances, includes an eight-hour cut that shifts from area to area.

Impact of blockade

The health risks are a concern to Ashraf Bargout, also a resident of Gaza City's Zeitoun area, who has seen his children fall into the dirty water several times. He is struggling to clean it up.

Why does no one answer our calls to solve this issue once and for all? We don't want to see our houses flooded, or our children drowning or becoming sick," Bargout told IRIN.

When the sewage flows down the streets, he sends his children away to stay with relatives.

"Does the world wait for a catastrophe to happen before moving? We fear the worst for our families. Look around and see how our children can live or survive, or how our life can be normal, with a

flood."

CMWU urged the international community to support efforts to help Gazans during winter. Staff say they are trying to fix broken equipment but that spare parts are hard to come by because of the difficulty of moving goods from Israel into Gaza. They have started distributing some fuel to municipalities to run the most important services.

Tony Blair, representative of the Middle East Quartet of peace mediators, called for prompt actions to find a lasting solution. He encouraged the Israeli government to reopen crossings into Gaza and allow the movement of goods and people to rehabilitate its economy.

"The impact of the storm has increased the urgency for immediate intervention in order to avoid a humanitarian catastrophe in the Strip, and has again illustrated the need for a more lasting solution to the problems facing the people there," he said.

And the situation could yet worsen.

"It is the beginning of the season and more waves are expected to come. We need an urgent action to avoid further issues," Yaqubi, of the Palestinian Water Authority, told IRIN.

A strategic vision should be developed to deal with such situations, he said, including storm-water harvesting projects, such as digging roadside wells and creating collection ponds that would store extra water for the aquifer, in addition to continuously maintaining and cleaning the drainage system.

Water services sharply reduced

"Sewage is not our only problem," said Bargout. "Our house receives water for just a few hours every two to three days. How ironic is that? While we're waiting for water from the tap, we receive the sewage water from the sink and everywhere."

Before the storm, due to the power crisis, only 15 percent of Gaza's population received water for domestic use daily. Twenty percent received it every two days, 25 percent every four days, and 40 percent every three days. When the water comes on, it is generally just for five to six hours.

The 25 small-scale desalination units used to provide water to around 160,000 Palestinians in Gaza are also affected by the fuel shortages; as a result their production dropped by 75 percent.

Water is a delicate issue in Gaza, which has seen increasing pollution of the main aquifer through waste water and sea water intrusion.

The Palestinian NGOs Network (PNGO) and local human rights organizations in Gaza blame the Israeli blockade policies, and also Palestinian authorities: "Both governments in Ramallah and Gaza have failed to take any effective steps to overcome this crisis and its consequences, and accordingly all daily basic services needed by the population have disastrously deteriorated," said the PNGO.

Amnesty International demanded Israel immediately lift its blockade on the Gaza Strip to allow the delivery of fuel and other essential supplies into the territory without restrictions.

"Since June 2007, when the Israeli blockade was tightened, Gaza's energy, water and sanitation infrastructure has been inadequate to fulfil the basic rights of its inhabitants. They were already poor due to prior Israeli restrictions and decades of neglect," the organization said.

It also called on the Egyptian authorities to facilitate the construction of new power lines to increase the electricity supply to the southern Gaza Strip. It said Palestinian and Israeli authorities must work together to find a sustainable solution to the fuel crisis.

Meanwhile, Al Shami says he is undertaking additional precautions to prevent further flooding into his house.

"No one knows what will happen later," he said.

"Powerful storm and power shortages fill Gaza with waste water", 19/12/2013, online at: http://www.irinnews.org/report/99358/powerful-storm-and-power-shortages-fill-gaza-with-waste-water

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❖ UN approves Palestinian sovereignty over natural resources

Amman, Dec. 21 (Petra) - The United Nations General Assembly on Friday adopted with majority the draft resolution about recognizing permanent sovereignty of the Palestinian people in the Occupied Palestinian Territory, including East Jerusalem, and of the Arab population in the occupied Syrian Golan over their natural resources.

A total of 168 countries voted in favor of the resolution, while six countries voted against. "Canada, the Federated States of Micronesia, Israel, Marshall Islands, Palau and United States opposed along with nine abstentions, namely Australia, Cameroon, Honduras, Kiribati, Malawi, Panama, Papua New Guinea, Paraguay and Tonga.

The approved text reassures the right of Palestinian people to dispose of their natural resources, including land and water, and recognizes the right to claim compensation as a result of the Israeli exploitation, destruction, loss or depletion of natural resources.

It also calls upon Israel to comply strictly with the obligations under international law, including international humanitarian law, and stop all actions that harmed the environment including the dumping of waste materials in the occupied Palestinian and Syrian territories.

"UN approves Palestinian sovereignty over natural resources", 21/12/2013, online at: http://www.petra.gov.jo/Public_News/Nws_NewsDetails.aspx?Site_Id=1&lang=2&NewsID=134139&CatID=13&Type=Home&GType=1

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❖ It Doesn't Take Much Global Warming To Drive Global Water Scarcity Way Up

According to new modeling by German researchers, global warming of just 2.7 degrees Celsius would inflict a "severe decrease in water resources" on 15 percent of the global population.

What's especially significant is that most of the damage gets done by relatively low amounts of global warming. The researchers at the Potsdam Institute for Climate Impact Research in Germany, who carried out the modeling, chose as their central framework theRCP8.5 — a future scenario of global warming laid out by the Intergovernmental Panel on Climate Change (IPCC), which assumes a business-as-usual path for carbon emissions. The projections of future population growth relied on the middle-of-road SSP2 scenario. When the researchers looked for the greatest overlap between the results, they found that 1°C to 2°C of global warming drove up absolute water scarcity around the world by 40 percent. That was due to climate change alone, before the effect of population growth was factored in. At 3°C of warming, climate change's effect falls to just 25 percent of the increase in scarcity, as population growth takes over. But the severe impacts continued well past 2°C of warming.

"Absolute water scarcity" is defined as access to less than 500 cubic meters of water per person per year. "Chronic water scarcity" is access to 1,000 cubic meters or less every year.The global average for water consumption per person is 1,200 cubic meters per year, and the number gets considerably higher in advanced western countries.

The study involved taking eleven different computer models of water flow and use around the globe, and then running them through five global climate scenarios — a simulation "of unprecedented size" according to the Institute's press release.

As far as the changes for absolute levels of water scarcity, the researchers determined that 1.5 percent of the global population currently struggles with absolute water scarcity, and 3 percent faces chronic water scarcity. At 1°C of warming that rises to 6 percent and 13 percent, respectively; at 2°C it hits 9 percent and 21 percent; and at 3°C it reaches 12 percent and 24 percent of all people around the world.

So add this finding to the growing body of evidence that even the 2°C threshold may come with far more upheaval than the world's governments currently anticipate.

The areas that were hardest-hit under the modeling were the Mediterranean, the Middle East, the southern United States, and southern China. As climate change involves a lot of regional variability,

southern India, western China, and parts of eastern Africa actually saw water availability go up. It's just that, as the headline numbers show, the total change is a big net negative.

Without drastic corrective action, and soon, the world is actually on track to blow past the 2°C (3.6°F) of global warming scientists view as the threshold beyond which climate change becomes truly catastrophic. Water shortages are a big part of that destructive effect. Shortages are already projected for major American river basins, they threaten major urban populations around the world. Water scarcity bodes ill for humanity's future energy prospects, given the centrality of water in most fossil fuel power generation.

Water scarcity is also one of the chief ways climate change could destabilize international security. The flood of Syrian refugees into Jordan is exacerbating Jordan's already chronic water shortages, and thus inflaming tensions in the region.

"It Doesn't Take Much Global Warming To Drive Global Water Scarcity Way Up", 17/12/2013, online at: http://thinkprogress.org/climate/2013/12/17/3076101/global-warming-water-scarcity/#

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❖ The Number of People Living in "Absolute Water Scarcity" Could Double Thanks to Climate Change

Climate change is beginning to suck the world dry. At least, in coming years it's going to leave hundreds of millions of people without access to water. A new paper published in the Proceedings of the National Academy of Sciences paints a grim picture of an increasingly thirsty near-future world—one where the population of people who live in areas of "absolute water scarcity" grows by up to 100 percent.

The UN has independently projected the number of people living in such conditions to rise to 1.2 billion by 2025. This new research shows that thanks to climate change, the number will likely spike even higher. The new paper, which draws from research by scientists from around the world, finds that changes in percipitation cycles, paired with rapid population growth trends, is about to put some serious stresses on water availability.

"Climate change is likely to exacerbate regional and global water scarcity considerably," the report says. The scientists used an "ensemble of global hydrological models" in tandem with five leading predictive climate models to look at how an increasingly carbon-rich atmosphere will impact water levels around the world. This allows the scientists to make some of the most accurate forecasts yet about the planet's hydrological future. Needless to say, the average of all of the resultant predictions is pretty dire.

The authors write that "In particular, the ensemble average projects that a global warming of 2 °C above present (approximately 2.7 °C above preindustrial) will confront an additional approximate 15 percent of the global population with a severe decrease in water resources and will increase the number of people living under absolute water scarcity by another 40 percent compared with the effect of population growth alone."

Which is alarming, obviously. But some of the models found that the situtaion was even worse—the number of soon-to-be-desperately-thirsty rose to 100 percent in certain scenarios.

In other words, when global temperatures rise another 2˚C—they're well on track to do so—there could be anywhere between 40 percent and 100 percent more people living in places—places like

Yemen, Pakistan, India, Australia, the American Midwest—subjected to extreme water scarcity. Climatologists believe we may hit 2 ˚C rise—or more—by midcentury. As in, less than 40 years from now. The EPA, meanwhile projects at least a 4˚C rise by 2100. Which will really bring the thirst.

In our lifetime, the number of people living in "absolute water scarcity" could easily double, bringing the specter of not just parched misery, but international conflict. The UN fears that conflicts over water-rich territory and transportation infrastructure could deepen or break out as the resource grows even scarcer. Analysts like Lester R. Brown has said that "it is now commonly said that future wars in the Middle East are more likely to be fought over water than over oil."

There are still uncertainties abound, of course, the report takes pains to point out. There's always more data to gather, and improvements to be made with conservation efforts. But the prognosis is clear, and troubling: a much thirstier world is looming.

"The Number of People Living in "Absolute Water Scarcity" Could Double Thanks to Climate Change", 22/12/2013, online at: http://motherboard.vice.com/blog/climate-change-will-make-water-scarce-in-the-near-future

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❖ China protects key river sources

BEIJING, Dec. 18 (Xinhua) -- China plans to strengthen the environmental protection of the Sanjiangyuan region of the Qinghai-Tibet plateau, the source of important rivers.

With an average altitude of 4,000 meters, Sanjiangyuan, which means "source of three rivers" in Chinese, lies in the hinterland of west China's Qinghai-Tibet Plateau and is home to China's biggest and highest wetlands ecosystem.

A newly-approved protection plan for the region aims to expand the rehabilitation area from 152,000 to 395,000 square kilometers, according to a statement released after Wednesday's executive meeting of the State Council, the country's Cabinet, presided over by Premier Li Keqiang.

According to the plan, efforts will focus on protecting and rehabilitating vegetation in the area while improving a monitoring and warning network for local ecological conditions.

Meanwhile, a separate plan on lakes whose water quality are relatively sound was also approved at the meeting. It called for adjusting the industrial structure and distribution in major lake areas and strengthened pollution control of rivers that flow into these lakes.

The statement encouraged strengthened scientific management, wider use of proper technology and the strictest source protection rules, calling for greater government investment and a balance among environmental protection, economic development and people's livelihoods.

Also at the meeting, a report was delivered on combating sandstorms in Beijing and Tianjin, urging more forestation subsidies from the central government and a responsibility pursuit system for forests management.

"Unapproved tree felling, land reclamation, farming, digging and the use of water resources in the forested areas must be strictly cracked down on," said the statement.

In addition, the meeting approved a blueprint on establishing a multifunction ecological experimentation zone in northwest China's Gansu Province that incorporates water saving, ecological protection, industrial restructuring, resettlement of residents and poverty relief.

"China protects key river sources", 18/12/2013, online at: http://news.xinhuanet.com/english/china/2013-12/18/c_125881249.htm?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=b623f6d159-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-b623f6d159-250657169

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❖ Planned for urban needs, 12 dams to hit tribals hard

MUMBAI: A dozen dams planned to provide water in the Mumbai Metropolitan Region(MMR) will affect at least a lakh tribal people and submerge more than 22,000 hectares of land.

Nearly 7,000 hectares of forests, lakhs of trees and more than 750 hectares of the Tansa sanctuarywill go under water. The findings are part of a report prepared by the South Asia Network on Dams, Rivers & People (SANDRP) that is to be released on Wednesday.

It said MMR authorities failed to conduct any serious options assessment study such as rainwater harvesting, local water systems, sewage treatment and reuse and demand management. "Such options assessment should form the first step before supply augmentation," it said.

Tribals and other affected groups of Thane and Raigad region are strongly opposing these projects, said Pareenita Dandekar of SANDRP.

"Most people in Mumbai seem unaware of their [tribal people's] struggles or the impacts of these projects," Dandekar said.

The 12 dams are either planned or are under construction, mainly to provide drinking and industrial water to the city and other urban places in the MMR.

The report said: "All these dams fall in the eco-sensitive region of the Western Ghats. They will affect a minimum of 1,00,000 tribals who depend on the forests and their ancestral lands for livelihoods."

These dams include Kalu, Shai, Balganga, Susari, Khargihill, Bhugad, Pinjal, Gargai, Middle Vaitarna, Barvi and Poshir and are in addition to the dams that already supply MMR water. Of the 12 dams, nine are in Thane district, two in Raigad and one in Nashik.

The report said the projects will have "profound cumulative impact on tribal communities and threaten eco-system" because of displacement and resettlement, deforestation, road construction, blasting, mining for construction materials.

The affected region is a part of the northern western ghats. The region supports very high biodiversity and most of the region falls either in Ecologically Sensitive Zone I (ESZ1) or eco-sensitive area. Dahanu region, where Susari dam, is planned falls in Ecologically Fragile Region notification.

"Surya irrigation project, which was built in Dahanu under the guise of irrigating tribal lands,

currently supplies most of its water to the MMR. Malnutrition, lack of irrigation and serious problems of drinking water are rampant in the region," said the report.

The study also claimed that the city currently has no supply shortfall for a population of 12.5 million, of which 6.5 million live in slums. Brihanmumbai Municipal Corporation (BMC) data shows supply of 100 litres per day per person for a slum-dweller and 200 litres for non-slum population.

Consumption is 686 million litres per day (MLD) for slums and 1,297 MLD for non-slum population, which comes to a total of 1,983 MLD. At the same time, if supply at source is 3520 MLD and the use is 1983 MLD for drinking water, there is an additional 1157 MLD water that is available. That means 32.86% of the current water supplied at source is unaccounted for. It is assumed that leakages are to the tune of 25% supply at the source (which is very high), we still have 7.86% water supplied that is unaccounted for. This means 880 MLD of water or nearly equal to two large dams Mumbai is planning to build," it said.

"Planned for urban needs, 12 dams to hit tribals hard", 18/12/2013, online at: http://timesofindia.indiatimes.com/home/environment/developmental-issues/Planned-for-urban-needs-12-dams-to-hit-tribals-hard/articleshow/27548259.cms

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❖ Groundwater sources to be registered, monitored

PANAJI: Water resources department (WRD) has announced its policy to register all groundwater sources and structures to ensure judicious use of such water and has laid down guidelines to ensure proper monitoring of withdrawal of groundwater.

The department has laid down a strict regimen to monitor the withdrawal of ground water, especially in industrial, commercial and mining areas. "Permission will not be given without installation of meters while the existing ones should also be metered in a phased manner," an official said.

The department has invited stakeholders and the public to comment on the policy which has been placed in public domain for suggestions and objections. Efforts to ensure registration by owners of wells has not achieved much success due to various factors.

The meters will be checked for quantum of use by the groundwater officer designated by the department or his representative. Surprise checks will be conducted on water suppliers.

"The withdrawal, especially for commercial, industrial and mining use, should be of permanent nature and the pumps should be fixed with a permanent arrangement," the policy states.

WRD officials have been directed to launch a campaign at the village level to sensitize the citizens regarding the importance and judicious use of groundwater and to register existing wells. "They have to seek permissions for new wells in the locality," a WRD officer said.

The utilization of the ground water resources is estimated at 43.83 million cubic meters, which is about 33% of the available resources, and considered safe.

Goa WRD prides itself as being one of the foremost among other states to implement the Goa Ground Water Regulation Act, 2002 (Goa Act 1 of 2002). Environmentalists have been disappointed by its slow enforcement, as excessive exploitation of ground water in some areas has posed a threat of pollution and ingress of salinity.

WRD has conceded the problem exists in some areas. "Though the overall groundwater utilization is safe, there are some localized stressed areas, especially industrial areas, coastal and urban areas and mining belt," the policy states.

The use of water was earlier limited to a few needs such as drinking, cooking, bathing, washing, but advent of technology has increased its uses manifold.

Operators of tankers and all transportation carriers have been directed to register themselves with the groundwater officers, who will issue a pass with their signatures and details of the tanker, the source of drawal and other aspects.

The vehicles will have to use the pass on the wind screen of the tanker.

"Groundwater sources to be registered, monitored", 20/12/2013, online at:
http://articles.timesofindia.indiatimes.com/2013-12-20/goa/45416558_1_ground-water-groundwater-industrial-areas

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❖ Indian dam to harm Neelum-Jhelum project

ISLAMABAD - The Senate was informed Thursday that construction of Kishanganga project by India in occupied Kashmir will result in a shortfall of about 14 percent flow for Pakistan's Neelum-Jhelum Hydroelectric Project.

Petroleum and Natural Resources Minister Shahid Khaqan Abbasi, on behalf of water and power minister, told the House that the Indian project will result in reduction of energy generation of Pakistan's hydroelectric project by 13 percent or 700 million units.

Abbasi said India is constructing the Kishenganga project in Occupied Jammu and Kashmir. The gross capacity of the reservoir is 18.80 million Cubic Meter or 14,900 acre feet with dead storage of 8755 acre feet and an operating poll of 6120 acre feet. He said the water of river Kishenganga is to be diverted through a 23km long tunnel to produce 330mw powers. He said that the water after production of power would join the Wullar Lake and ultimately flow down through Jhelum to Muzaffarabad.

To a question, the minister said that International Court of Arbitration would announce verdict on Kishenganga Hydroelectric project by the end of current month. He informed that India was allowed to construct Run-of-River hydroelectric plants and limited storage works on the Western Rivers (Indus Jhelum and Chenab) within the limits of design criteria provided in the relevant provisions of the Indus Waters Treaty 1960.

The minister said that all dams constructed by India on Pakistan's Western Rivers so for are Run-of-River Hydroelectric plants which do not involve any consumption of water therefore no reduction in flow coming to Pakistan has been noticed or likely to occur on account of the dams constructed for hydropower generation. He said that India is bound to provide detailed information and design data regarding the proposed projects.

Abbasi also informed the Senate that Iran-Pakistan Gas Pipeline Project is constrained by international sanctions, hoping that work on the project would start soon after softening of the sanctions. To a question during the Question Hour, he said that Iran has cancelled a planned $500 million loan to Pakistan to construct a part of the pipeline. He said that half of the work on the project has been completed, adding that China has not made any offer to finance this project. "Pakistan needs the project and wants to complete it," he added.

Responding to yet another question, the minister said over 2.48 million barrels of oil was produced in

the country in October this year. Of this, 1.16 million barrels was produced in Khyber-Pukhtunkhwa. The petroleum minister said a total of 29 cities have been provided natural gas by SNGPL and SSGPL since 2010. He assured that PML-N government would make serious efforts to provide gas to cities of Balochistan.

PPP Parliamentary Leader in the Senate Mian Raza Rabbani said that prime minister is violating constitution by not attending the Upper House. Speaking on a point of order, he said that since assumption of his office, the PM has not attended the Senate even for once which is sheer violation of the constitution under the 18th amendment.

Rabbani recalled that despite several requests by the members, the prime minister has not paid heed to their pleas, urging the government to shun this attitude and give due importance to the parliament which is the prime source of government's strength. Senator Rabbani was of the view that attitude of the prime minister and his government suggests that they have little regard for the democracy in the country.

Leader of the House Raja Zafarul Haq rejected Mr Rabbani's contention saying the prime minister and the PML-N give due importance to the democratic system in the country and he would definitely attend the House but at the time he was preoccupied with other matters of the national importance.

The House also unanimously approved an amendment in Rules of Procedure and Conduct of Business 2012 to form a Functional Committee on Human Rights. The motion was moved by Senator Raza Rabbani for amendments in Rules 158 and 161 to form a functional committee on Human Rights.

In addition, the House debated a motion on the current political and security situation in the country with particular reference to Balochistan, Fata and Rawalpindi incidents. Three senators belonging to PPP, ANP and an independent lawmaker shared their views on the motion for 39 minutes. Senator Abbas Khan Afridi from Fata and Zahid Khan from ANP sought a special development package for Fata saying that unless tribesmen were happy, no military action against militants would succeed. They were of the view that since Fata has suffered the most in the course of war against terror, it deserves a special package.

Senator Afridi said that proper attention should be given to Fata and KPK as without their support important national security targets could not be achieved.

He said that the bureaucracy always ignored the people of Fata, adding that the people who migrated and left their houses should be provided relief to settle them as it is responsibility of the state. He said

that there is no check and balance on foreign funding of NGOs. He said Fata people are loyal to Pakistan and they always contributed to the development of the country but they were always deprived of their rights.

Senator Zahid Khan said that foreign funding should be monitored with transparent mechanism to provide relief to the people of KPK and Fata. He said that terrorism affected the whole country but Fata and KPK were in the fore front against war on terrorism. He said dialogue should start when all parties have already given the mandate to government. He said that forces should not be deployed in Fata without consent of the local people. He said that prime minister should come into the parliament to brief the House regarding different issues.

Senator Saeed Ghani said that specific class is being given relief and common people suffered with the policies of government. He said that inflation was increased during the tenure of present government and added that prices of commodities also increased which affected poor. He said that government is planning to dismiss officials from different departments and also formed a committee for it, which should be not be done. The House was adjourned until Friday.

"Indian dam to harm Neelum-Jhelum project", 20/12/2013, online at: http://www.nation.com.pk/national/20-Dec-2013/indian-dam-to-harm-neelum-jhelum-project

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❖ Assembly panel against mega dams

GUWAHATI, Dec 21 – "The Governments concerned and the agencies associated with hydel power generation should desist from constructing mega dams which may pose a grave threat to the life and property of the people of Assam."

This was one of the observations made by the State Assembly's House Committee on the downstream impacts of the mega dam projects, being constructed in Arunachal Pradesh.

The Committee maintained that no dams should be allowed to be constructed in the neighbouring states without proper comprehensive and scientific downstream impact assessment.

It also said, "The State Governments concerned should also carry out comprehensive downstream studies through their own agencies and consult experts before issuing No Objection Certificates (NOCs) for setting up of hydro-electric projects. If necessary, the existing procedures / laws should be amended."

It also called for steps by the State Government to take up the recommendations made by the Expert Group of the State at para 10.2.1(in Part –I) of its report with theGovernment of India 'without delay.'

The Expert Group of the State, comprising the experts of the IIT-Guwahati, Gauhati University and Dibrugarh University, had in the said para of its report, submitted on June 18, 2010, stated, "The present investigations carried out to examine the downstream impact of the Lower Subansiri Hydroelectric Dam project reveal gross inadequacy in the relevant facts relating to the construction of the dam at the present site by the authorities concerned. The selected site for the mega dam of the present dimension was not appropriate in such a geologically and seismologically sensitive location. The seismic design parameter is not properly chosen for the project. According to the investigation, the recommended seismic design parameter is at 0.5 or more. Therefore, it isrecommended not to construct the mega dam in the present site."

Following the recommendations of this Expert Committee and the apprehensions expressed by the overwhelming majority of the State's people on the adverse impacts of the Subansiri Lower Project

(SLP), or, Lower Subansiri Hydroelectric Power Project (LSHEP), the then Union Minister of State (Independent) for Environment and Forests Jairam Ramesh held a public consultation on the issue on September 10, 2010 in Guwahati.

Following the popular opinions expressed at the meeting, he wrote to the Indian Prime Minister on September 16 that year, to scrap the LSHEP 'completely.'

The Planning Commission then appointed a two-member Technical Expert Committee (TEC) to study the LSHEP comrpising former Secretaries to the Union Ministry of Water Resources — Dr C D Thatte and Dr M S Reddy. The TEC in its report submitted to the Planning Commission in July 2012, said, "The sandstone, which really looks and behaves like a sand rock, on which the dam is founded, has all through the SLP planning been considered very weak. Its adequacy and competence to support the concrete gravity dam is not established satisfactorily."

The TEC supported the view of the State experts on the seismic design parameters and also recommended an independent dam design review panel (DDRP).

But, the DDRP was constituted with the officials of the IIT Roorkee and NHPC, which are party in this case. So, said AASU advisor Samujjal Bhattacharyya, the DDRP could not become an independent body as suggested by the TEC.

"Assembly panel against mega dams", 21/12/2013, online at:
http://www.assamtribune.com/scripts/detailsnew.asp?id=dec2213/at05

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❖ Pakistan's rivers: construction of dams by India: government asked to raise issue at international forums

The members of the National Assembly urged the government to take serious steps to raise the issue of construction of dams by India on the rivers of Pakistan at international forums to resolve it on immediate basis. They said that the construction of dams by India on Pakistan's rivers would create serious water shortage in future.

They said that it would be very difficult for the country to cope with the issue in future if serious steps were not taken with regard to construction of water reservoirs. They urged the government to take solid steps and expedite its efforts for construction of small and big dams to overcome shortage of water and power and to boost agriculture sector.

Controversy hit the House when some members of Pakistan Muslim League-Nawaz (PML-N) said that the construction of Kalabagh Dam was essential for power generation and cultivation. However, Minister for States and Frontier Regions, Abdul Qadir Baloch, cooled down the atmosphere of the House by clarifying that his government would not undertake any project which impinges on the national solidarity.

The Minister said that the government would not construct any water reservoir without evolving national consensus. He said that statements of some members should not be construed as the party policy. He said the government's stance was very clear on the issue and an individual's statement should not be considered as the policy of Pakistan Muslim League-Nawaz (PML-N).

He admitted that differences exist on Kalabagh Dam and his leadership was one hundred percent clear that the project would not be touched as long as complete consensus was not evolved on it. Leader of the Opposition in the National Assembly Syed Khurshid Ahmad Shah said small provinces and the PPP were not against the construction of dams, as the previous government initiated work on Diamer Bhasha Dam, Dasu Dam, besides announcing Bunji Dam project and had allocated huge funds for this purpose.

He, however, said that Kalabagh Dam was a controversial subject and such issues should not be

raised which could harm the federation. He said that Nawaz Sharif categorically stated that any dam will not be constructed by the government without consensus of the provinces.

The mover of the resolution in the House on the issue of construction of Dams by India on the water of Pakistan, Belum Hasnain of PPP said that the government should take serious steps for stopping construction of dams by India on Pakistan's rivers. She said that effective measures should be taken to avoid water shortage. Without water the country's economy would be destroyed, she said and added that India was violating Indus Water Treaty by constructing dams on Pakistan's waters and the government should take up the matter at the level of United Nations.

Shafqat Mehmood of Pakistan Tehreek-e-Insaf (PTI) said a special national conference should be convened for resolving disputes with India. He said that the issue of water with India was not separate from the issues of Kashmir and Siachen. The issue of water should be placed at the top of the list for negotiation with India.

PPP's Shazia Marri said half of the country had already rejected the construction of Kalabagh Dam. The government should ensure equitable water distribution among provinces. Aisha Gulailai expressed apprehensions about the reported import of electricity from India. She said that the stance of Pakistan on water issue would weaken if we import electricity from India.

Ayaz Soomro said that Kalabagh Dam should not be built without national consensus. He said that three provinces had passed resolutions against Kalabagh Dam. Nawab Yousuf Talpur, Sheheryar Afridi, Usman Khan Tarakai, Makhdoom Javed Hashmi, Tahira Aurangzeb said India condemned India for constructing dams on Pakistan's rivers was conspiring against Pakistan by constructing various dams on vital water tributaries. India had so far constructed 52 dams. She said that Kalabagh Dam must be constructed with the consent of provinces.

"Pakistan's rivers: construction of dams by India: government asked to raise issue at international forums", 18/12/2013, online at: http://www.brecorder.com/agriculture-a-allied/183/1265384/

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❖ West Africa hopes new hydropower dams will cut poverty, climate risk

YAOUNDE, Cameroon (Thomson Reuters Foundation) – West African states in the Niger River Basin are seeking to tackle climate risks and reduce poverty by constructing three hydropower dams in the next five years.

In late November, the Council of Ministers of the Niger Basin Authority (NBA), meeting in Cameroon's capital Yaounde, endorsed an environmental and climate action plan for sustainable management of the scenic basin and its rich natural resources, which have come under threat from climate change.

The projects include a 102 megawatt (MW) hydropower dam at Fomi in Guinea, a 25 MW hydropower plant in Toussa, Mali, and the 565 MW Kandadji dam in Niger. These aim to boost hydro-electricity and irrigation, reduce desertification and flooding, and improve economic activities across the region.

"The West African region is facing urgent problems of food security, rural poverty and climate change that demand answers in the form of investment and infrastructure. We need to give a push to these three multi-purpose hydropower dam projects as a sustainable solution that involves the region's largest river," NBA executive secretary Collins Ihekire said in a statement at the Yaounde gathering.

The NBA is the coordinating body for the 4,200 km-long (2,600-mile) Niger River, bringing together the governments of Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger and Nigeria.

The NBA also agreed to rehabilitate three hydropower plants at Kainji, Jebda and Lagdo, as well as multiple run-of-river hydropower stations, optimise water storage, set up irrigation schemes for an additional 1 million hectares (2.5 million hectares) of land, and increase hydropower production to 1,000 gigawatt hours per day.

"Integrating future climate change adaptation and mitigation into our development action plan will enable...sustainable management of our water resources, to better the livelihood of the over 106

million population in the area," said Emmanuel Nganou Djoumesi, Cameroon's minister of the economy, planning and regional development, at the closing of the Yaounde meeting.

BOOST TO FOOD SECURITY

The decision to reinforce climate and environmental protection in the basin comes after a series of World Bank-funded studies to assess climate risk in the area.

The research concluded that "the impacts of climate change on minimum water flow in the river are potentially severe", according to an NBA report. "Rain-fed agriculture in the area is vulnerable to climate change. Crop yields have reduced by more than 15 percent in the last five years due to increase in temperature by more than 2 degrees."

This has undermined food production, especially in the Sahel region, which includes NBA member states like Cameroon, Chad, Niger and Nigeria, which have high rates of child malnutrition, the report said.

As well as generating electricity for surrounding areas, the new dams will also boost production of crops like rice and vegetables, and alleviate the impacts of climate change, authorities say.

"The Fomi multi-purpose dam in Guinea will not only provide hydroelectric power, but its reservoir will create opportunities for fishing. Areas around the reservoir will also be suitable for raising cattle and other types of livestock as well as for agriculture. The new body of water will also provide a habitat for aquatic birds," the NBA report said.

The $384 million project will enable regulation of water levels in the Niger River, benefiting countries downstream by making irrigation possible during the dry season, the NBA says.

The Taoussa dam in Mali - estimated to cost $38 million - is slated to generate electricity for Burkina Faso and Niger, and could eventually provide irrigation for nearly 140,000 hectares.

The largest of the three dams in terms of power generated, Kandadji in Niger, will cost around $236 million.

Funding for the three dams is being provided primarily by the World Bank and the African Development Bank.

WHO BENEFITS?

But environmental experts say their planned construction raises concerns.

Samuel Nguiffo, coordinator of the Centre for the Environment and Development, a Cameroon-based nongovernmental organisation, acknowledged that Africa needs energy for its development, but said the social and environmental price of constructing big dams is often too high.

"People have to be displaced, communities along the project area have to sacrifice their land and livelihood for little or no benefits, and the natural environment (is) destroyed," he said, citing a report by the International Union for Conservation of Nature that said Kandadji dam would displace some 38,000 people along the river.

Inequitable distribution of benefits can also sometimes spark conflicts that call into question the overall value of many dams in meeting water and energy needs, he added.

In 2012, Wetlands International, a Netherlands-based NGO, said the huge reservoir required for the Fomi Dam would need to be filled during the wet season, lowering the peak of the river water, and considerably shrinking the size of the seasonally inundated area of Mali's Inner Niger Delta.

Plans to expand upstream irrigation schemes for rice, sugar cane and cotton production would also exceed river capacity from March to May, posing serious downstream problems, it said, urging governments in the region to consider alternative energy sources.

"Sustainable energy options, such as solar power may be better long-term options to invest in than hydropower. The revenues of hydropower dams in this dry area of Africa are rather marginal but the corresponding impacts of reduced water availability are huge," **Wetlands International said** on the sidelines of the 2012 World Water Forum.

This week, civil society organisations called on the World Bank – which is asking donor governments to replenish the International Development Association (IDA), its fund for the poorest countries – to stop financing large-scale dam construction.

The Bank plans to support a new generation of controversial mega-dams, including the Inga 3 Dam on the Congo River, from the IDA fund, advocacy group **International Rivers said in a statement**.

"Poor rural communities will pay the price for a new generation of destructive mega-dams, but will be the last to benefit from the electricity they generate," said Peter Bosshard, policy director for International Rivers.

"West Africa hopes new hydropower dams will cut poverty, climate risk", 17/12/2013, online at: http://www.trust.org/item/20131217125940-0yqo5/?source=hptop&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=83a4a2177c-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-83a4a2177c-250657169

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❖ Call to tap water resources in Dhofar

By Kaushalendra Singh — SALALAH — By 2030 the global demand for water is to increase by 40 per cent and it is high time Oman and other Gulf countries should draw aggressive water management plans to meet the situation. This was suggested by Dr Nadim Farajalla, Associate Professor of Environmental Hydrology at American University of Beirut, while citing the Catley-Carlson's study which states spurt in water demand for by 2030, thus making a strong ground for full exploration of water resources in Dhofar and harvesting it for day-to-day use. "The water situation has been compounded by a changing climate in which, globally, temperatures are going to rise and precipitation fall leading to diminishing resources coupled by increasing demand."

He mentioned these findings in his paper titled 'Fog harvesting — A viable source of water in a changing climate in arid regions'. Dr Nadim said the Middle East is considered as the most water scarce region in the world due to far more dependence on renewable water resources than other regions. He cited other studies which state that Tunisia is using 83 per cent of its available renewable resources, while Egypt is using 92 per cent, Libya 644 per cent and Gaza 169 per cent. "According to FAO estimates, All the GCC countries except Oman, are using in excess of 100 per cent of their available freshwater resources. This situation is not going to improve as the precipitation in the Middle East is to decrease between 5 per cent and 25 per cent by 2050. Thus recharge of groundwater and replenishment of surface water will decrease drastically," the paper said.

He suggested fog and dew harvesting a viable solution to meet the ensuing water crisis in the Middle Eastern region. "This ancient technology has experienced a revival in the latter parts of the 20th century and early 21st century. Historically, fog harvesting was known in Palestine, in ancient Greece, in the Canary Islands and in India in the 1600s amongst many other places. More recent research has focused on estimating the amounts of water that could be yielded by cloud harvesting and on means of integrating this source of water within existing water supply networks or as supplementary sources of water." The fog harvesting, according to him, is an essential approach not only to provide much needed additional water but also to enable areas to adapt to climate change by conserving and protecting marginal and degraded landscapes.

"Call to tap water resources in Dhofar", 18/12/2013, online at: http://main.omanobserver.om/?p=40456

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❖ Lower Rio Grande Basin Study Shows Shortfall in Future Water Supply

Bureau of Reclamation Commissioner Michael L. Connor released the Lower Rio Grande Basin Study that evaluated the impacts of climate change on water demand and supply imbalances along the Rio Grande along the United States/Mexico border from Fort Quitman, Tex., to the Gulf of Mexico.

"Basin studies are an important element of the Department of the Interior's WaterSMART initiative and give us a clearer picture of the possible future gaps between water demand and our available supplies," Commissioner Connor said. "This study of the lower Rio Grande basin will provide water managers with science-based tools to make important future decisions as they work to meet the region's diverse water needs. In addition, the study will help inform water management discussions between the U.S. and Mexico through the International Boundary Water Commission."

Among the findings and conclusions of the Lower Rio Grande Basin Study:

Climate change is likely to result in increased temperatures, decreased precipitation and increased evapotranspiration in the study area. As a result of climate change, a projected 86,438 acre-feet of water per year will need to be added to the 592,084 acre-feet per year of supply shortfall predicted in the existing regional planning process in 2060, for a total shortfall of 678,522.

Water supply imbalances exacerbated by climate change will greatly reduce the reliability of deliveries to all users who are dependent on deliveries of Rio Grande water via irrigation deliveries.

The Study includes an acknowledgment that all water management strategies recommended through the recently adopted regional water plan are part of a needed portfolio of solutions for the Study Area.

Seawater desalination, brackish groundwater desalination, reuse and fresh groundwater development were examined as alternatives to meet future water demands. The study found that brackish groundwater development was most suitable. Further analysis was conducted; it was found that regional brackish groundwater systems would best meet the planning objective. An appraisal-level plan formulation and evaluation process was conducted to determine potential locations of each regional brackish groundwater desalination system.

The Lower Rio Grande Basin Study was developed by Reclamation and the Rio Grande Regional Water Authority and its 53 member entities. It was conducted in collaboration with the Texas Region

M Planning Group, Texas Water Development Board, Texas Commission on Environmental Quality and International Boundary and Water Commission. It covered 122,400 square miles. The study cost $412,798 with the RGWRA paying for 52 percent of it.

"Lower Rio Grande Basin Study Shows Shortfall in Future Water Supply", 17/12/2013, online at: http://www.sciencedaily.com/releases/2013/12/131217171000.htm?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=b3c3dae2c1-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-b3c3dae2c1-250657169

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❖ Caring for Water Is a Must for Brazil's Energy Industry

FOZ DE IGUAÇU, Brazil , Dec 20 2013 (IPS) - As they build huge hydropower dams, the Brazilian government and companies have run into resistance from environmentalists, indigenous groups and social movements. But the binational Itaipú plant is an exception, where cooperation is the name of the game.

Involved in a total of 65 environmental, social and productive activities, the Cultivando Agua Boa (Cultivating Good Water – CAB) programme is led and supported by activists. Sectors of the government are considering using it as a model to be replicated in other major infrastructure projects, to mitigate impacts and conflicts.

Compared to what is happening in the rest of the hydroelectric dam projects, "it's a stride forward," said Robson Formica, head of the Movement of People Affected by Dams (MAB) in the southern state of Paraná, where the giant Itaipú hydropower complex is located on the border between Brazil and Paraguay.

Itaipú Binacional, the company that operates the hydroelectric plant, decided to guarantee efficient long-term electricity generation by caring for the Paraná river basin to ensure both the quantity and quality of the water. That has paved the way for cooperation with environmentalists.

More than 80 percent of Brazil's electricity comes from its rivers, which means the country's energy security depends on rainfall and on the best possible use of water.

Itaipú's CAB programme was launched in 2003, two decades after thousands of rural and indigenous families were displaced in order to flood their land and fill the 1,350-sq-km reservoir. The dam is the world's largest hydroelectric power producer.

Formica said CAB's activities are "important, but limited and isolated."

"They fail to establish a policy for local development, or for structural changes in the area in question," added the head of MAB, which estimates that hydroelectric dams have displaced around one million people in Brazil.

The demand that the company take over functions that normally fall to the state has gained force as mega-dams and other infrastructure projects that drastically modify extensive areas of rainforest and other habitats mushroom around the country.

In addition, environmental laws are requiring compensation for damage caused.

In the case of Itaipú, that requirement is particularly justified. It is an unusual company, run by two different national governments, and it brought in revenue of 3.8 billion dollars in 2012.

The land and rivers where the complex operates along the border between Brazil and Paraguay contain the enormous hydroelectric plant, the reservoir, 104,000 hectares of land that is under environmental conservation, theUniversity of Latin American Integration and the Itaipú Technological Park.

The CAB programme is active in 29 municipalities in Brazil covering a total surface area of 8,339 sq km, with one million inhabitants, along a 170-km stretch of the Paraná river and reservoir.

The programme's 65 activities include assistance to indigenous communities, aquaculture, medicinal plants, biogas and environmental education – a concerted effort connected by the central aim of taking care of the water.

For example, CAB's sustainable rural development activities revolve around organic agriculture as the top priority, aimed at reducing the pesticides polluting the reservoir.

"We started out with 186 families; today there are 1,180 families participating, and there are 2,000 organic gardens," said Nelton Friedrich, Itaipú director of coordination and the environment.

The Itaipú Platform of Renewable Energies was also created, to protect the rivers from animal manure. The manure is converted into biogas, which generates electricity, thus creating another source of income for local farmers while curbing pollution of the water.

Family farming is the main livelihood around the reservoir, where there are millions of pigs, barnyard fowl and cattle on 26,000 smallholdings. If allowed to run into the water, the manure would cause excessive build-up of nutrients and the proliferation of aquatic weeds, which reduce the oxygen in the water.

This process is called eutrophication, explained Cícero Bley, Itaipú's superintendent of renewable energies. "Pollution by organic waste is more common than pollution by toxic agrochemicals," and in some cases makes constant cleaning of reservoirs necessary, he said.

It takes nearly 30 days to renew the water in the Itaipú reservoir, compared to much shorter time-frames in other dams.

On the Madeira river in the northern Amazon jungle state of Rondônia, where the Santo Antonio and Jirau hydroelectric dams just began to operate, it takes just two or three days to renew the water in the reservoirs, said Domingo Fernandez, Itaipú's chief researcher on fish.

Clean-up and reforestation are thus clearly necessary along the banks of the reservoir to keep the water healthy and productive. The CAB programme planted more than 24 million trees around the Itaipú reservoir.

The initiatives follow a methodology that is also key, expanding the activities to the entire watershed, "because nature organises itself by watershed," Friedrich said.

The model followed is based on the concept of shared responsibility, involving all local actors, from public and private companies to civil society and universities, with community participation – a kind of "direct democracy," he explained.

To that end, management committees were created in the 29 municipalities, made up of an average of 57 representatives of different sectors, after numerous meetings were held for awareness-raising and debate on problems that have arisen.

The so-called water pacts, which are community commitments signed in ceremonies, drive the design and collective implementation of the plans and projects.

These initiatives point out a good path to follow, but are far from filling Itaipú's social debt, said Aluizio Palmar, founder of the Centre for Human Rights and Popular Memory and a former secretary of the environment and communication in Foz de Iguaçú, the Brazilian municipality where the binational dam operates.

Construction of the hydropower plant between 1975 and 1983 displaced rural families, many of whom did not hold legal title to their land, which they needed to obtain compensation. The families

joined the ranks of the people living in the favelas or slums, and the rates of violence in Foz de Iguaçú shot up, Palmar pointed out.

The monetary rewards, such as royalties, mainly benefited the city governments, which used the money to build shiny new government buildings and tourist attractions, while dedicating very little to cover the needs of the local population, Palmar complained.

Nevertheless, the situation at Itaipú stands in contrast with the situation in other parts of the country, especially on the São Francisco river, where there is a national clamour for the river to be cleaned up and revitalised, and where there is only an incipient programme coordinated by the environment ministry.

Five large hydroelectric dams with a total combined output of 10,827 MW – equivalent to 77 percent of Itaipú's production – harness the increasingly scarce water in Brazil's semiarid Northeast.

The main portion of the river crosses the impoverished region, and besides the frequent droughts, the São Francisco suffers from sedimentation and pollution caused by human activities, such as deforestation along the riverbank, the dumping of untreated sewage, and agribusiness projects irrigated with water from the river.

"Caring for Water Is a Must for Brazil's Energy Industry", 20/12/2013, online at: http://www.ipsnews.net/2013/12/caring-water-must-brazils-energy-industry/?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=65c090e2ad-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-65c090e2ad-250657169

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❖ County seeks retool of water policy

Sonoma County's effort to preserve the dwindling water in Lake Mendocino could involve a major revision of how the reservoir is managed.

The Sonoma County Water Agency is asking the State Water Resources Control Board for permission to cut flow from the lake below 75 cubic feet per second, the normal minimum for a dry year.

But instead of simply asking the state to allow a lower flow, as it has done in the past, the agency is seeking to break with the half-century-old way that drought conditions are analyzed in order to set flow rates.

Since at least the 1960s, the state has used flow rates on the nearby Eel River to determine whether a year is "normal," "dry" or "critical" in the headwaters of the Russian River. The designation determines how much water the agency is obligated to release downriver to protect agriculture, fish spawning grounds, recreational uses and drinking water for cities such as Healdsburg, Cloverdale and Ukiah.

In a petition delivered to the state Thursday, the agency asks for the determination of the flow rate to be based instead directly on the water level in Lake Mendocino, which is today only around 30-percent full with no prospect of significant rain in the forecast over the next several weeks.

"You really are beginning to focus the attention on the storage at Lake Mendocino, where it belongs," agency General Manager Grant Davis said. "That's the good news, that we are focusing in on the area of vulnerability."

Should the state grant the request, it would change the management of the dam for only as long as 180 days. If the system works out well, the agency plans to request that the system be made permanent.

The change may seem arcane and technical, but it has important implications for the future water supply on the upper Russian River, agency officials say. The conditions in the Eel River have become an increasingly unreliable guide to conditions in the Russian River over the years, and basing management decisions on real conditions in Lake Mendocino would give the agency much greater control over its own water resources.

The Water Resources Control Board did not comment on the details of the plan by Thursday afternoon, but in general it is open to considering long-term changes in the way the dam is managed, provided the agency can make a case for its idea, said Amanda Montgomery, manager of permitting and licensing for the board.

It appears the board originally linked the management of Lake Mendocino to conditions on the Eel River because of a century-old tunnel that links Lake Pillsbury, a reservoir on the Eel, with the upper reaches of the Russian River. PG&E sends water down that tunnel to run a power turbine and the water winds up in the Russian River.

At one time, that was a significant source of water for Lake Mendocino, but a 2004 change in PG&E's license cut that back dramatically. Just this week, PG&E secured federal permission to slash the flow even further, from 35 cubic feet per second to just 5, a move designed to conserve water in Lake Pillsbury, which is in even worse condition than Lake Mendocino after two extremely dry years.

But even as Lake Pillsbury faded as a source of water for Lake Mendocino, the decisions on how to manage the dam remained linked to conditions on the upper Eel River, an indicator that is "is no longer so reliable," agency Assistant General Manager Pam Jeane said.

In addition to seeking state permission to cut flows from Lake Mendocino, the Water Agency is going to launch an unusual wintertime drive to urge consumers to save water. The larger reservoir at Lake Sonoma is still about 70 percent full, but the agency is worried that another year of drought could put pressure on that water source, too.

The agency will advertise "an aggressive water reduction, to make sure you're checking your leaks, making sure you're doing everything you can to use water wisely," Davis said. "And it's a year-round thing; I just don't see a day when you can say this is seasonal."

While it won't help ease the current drought, the agency is looking at longer-term ways to conserve water as well, such as reconfiguring its system of detention ponds to help recharge ground water, injecting excess water into aquifers during rainy periods to preserve supplies deep underground, and marketing treated wastewater to farmers and other users to slow down the rate at which they irrigate using fresh well water.

The agency also is updating its planning models for the upper Russian River, taking a look at who is using the water, long-term growth plans of communities that rely on the river, and the emerging models for what effect climate change will have on rainfall patterns. That report is due to the state by the end of 2014.

"We're entering into an era of increasing uncertainty," Davis said. "We have to plan for extreme droughts and floods over multiple years, and be able to manage our water supply under those conditions."

"County seeks retool of water policy", 20712/2013, online at:
http://www.pressdemocrat.com/article/20131220/articles/131229990#page=0

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❖ United States Afraid of Clean Water Becoming a Human Right

Considering that access to clean water is necessary for human survival, it doesn't seem like a controversial move to declare water a human right. Yet when faced with the prospect of making it international law, why is it that the United States was the one nation to have objections?

November marked the first time every country belonging to the United Nations agreed to make both clean drinking water and sanitation a human right, cementing it as international law. The victory, however, is somewhat marred by the United States' move to lower the stakes of the proclamation.

Germany and Spain, chief sponsors of the resolution, wrote a detailed explanation of the human rights it hoped to guarantee: "The human right to safe drinking water and sanitation entitles everyone, without discrimination, to have access to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use and to have physical and affordable access to sanitation, in all spheres of life, that is safe, hygienic, secure, and acceptable and that provides privacy and ensures dignity."

Although every single country was prepared to cosign this declaration, the United States said it would not approve of "the expansive way this right has been articulated." While the wording of the proclamation seems designed to prevent loopholes around providing adequate sanitation and clean water to people, the United States did not attempt to clarify in what way.

Unfortunately, given the nation's clout, the United States' unsubstantiated balk was all it took to convince Germany and Spain to remove the extra language so that it could receive unanimous support. The existing (forgive the pun) watered-down proclamation is certainly a start toward guaranteeing clean drinking water, but lacks the influence it would have carried had the United States not intervened.

Renowned human rights organization Amnesty International is especially critical of this power play. In an official statement, the organization calls on the U.S. government "to explain which of these aspects of the rights it cannot accept and why. It owes this explanation to the world at large, and to Americans, who deserve to know which aspects of their rights to water and sanitation their Federal government refuses to guarantee." Additionally, Amnesty International points out that, despite being

a developed nation, the United States has been previously called out by the United Nations for "not taking adequate steps to ensure quality, affordability, and access to water and sanitation."

Another reason that the United States might want a less strict definition of clean water as a human right is that water wars are growing – not just internationally, but within the country itself. Experts foresee a growing number of battles for a limited supply of water, and the government may want to preserve its ability to take and allocate water as it chooses.

Fortunately, this one intrusion is not enough to prevent more substantial international laws to be made in the future. The United Nations will continue to meet to strengthen their resolutions on sanitation and clean water and – given the overwhelming international support – it is possible that amendments could be adopted even without the U.S.'s support.

"United States Afraid of Clean Water Becoming a Human Right", 18/12/2013, online at: http://www.care2.com/causes/united-states-afraid-of-clean-water-becoming-a-human-right.html

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❖ Vast Rio Grande a source of numerous legal battles

LAREDO — Many Texans who live along the border with Mexico share the legend of La Llorona, a repentant mother who is said to have drowned her children in the Rio Grande. And they pass on another myth: Once you drink the river-fed tap water here, you are bound to the region.

Such tall tales are an ode to the 1,900-mile river that is known as the Rio Bravo to Mexicans, whose connections and ownership of the river is as strong as their neighbors to the north.

Researchers say the Rio Grande is one of the most studied and controversial bodies of water in North America. But with various levels of government in two countries making decisions that influence it, the Rio Grande has become the subject of interstate and international legal battles that have intensified during the continuing drought.

"It's obvious there isn't anything like" the Rio Grande, said Gabriel Eckstein, a professor at the Texas A&M University School of Law and the director of the International Water Law Project. "It's a border river amongst U.S. states and internationally. You just have so many stakeholders with different jurisdictions and laws that apply."

The river begins about 12,000 feet above sea level in Colorado and flows southeast, cutting through New Mexico and forming the Texas and Mexico border between Chihuahua State and El Paso. In El Paso, the river flows through a concrete channel where the banks on either side of the international bridges contain more graffiti than brush. In South Texas and the Rio Grande Valley, it swells deep and wide enough that each year several people trying to cross it drown. Local residents argue that artificial barriers are not needed because of this natural boundary.

It is at the New Mexico border where water needs and individual interpretations of laws create one controversy. New Mexico and Texas are embroiled in a lawsuit over groundwater extraction. Texas argues its neighbor is allowing excessive pumping, reducing the flow of the Rio Grande into Texas.

A 1938 compact between Colorado, New Mexico and Texas governs how much of the river's water the states are allotted. Eckstein says that the compact does not consider different state practices.

"Are they allowed to do it? That's a different question," he said. "New Mexico has a different law for groundwater versus surface water, and it's unclear whether the compact relates to that."

As the Rio Grande continues southeast, intrastate needs create more domestic discord.

Tom Miller, the director of the Lamar Bruni Vergara Environmental Science Center in Laredo, said people there are monitoring a proposal by the city of San Antonio that would pipe in water from the San Felipe Springs in Val Verde County. The springs feed the river, and Miller said the action would harm one of the few hundred springs left in a state that used to contain thousands.

"We're very concerned about this intrabasin transfer of water," said Miller, whose Webb County office is just feet from the Rio Grande's banks. "How will it affect the general water table of the river, and will it lower so that the water will have a harder time being delivered to the intended recipients? How will it affect ours?" San Antonio officials say considering the option is necessary to help satisfy its growth needs, which have been magnified by the drought.

About 60 miles downstream from Del Rio in Eagle Pass, a battle over a coal mine and its potential impact on the river is a source of contention between the U.S. and Mexico. For years, local officials and environmentalists have sought to halt the expansion of a Mexican-owned coal mining operation into Texas, alleging it will pollute the river, the city's main source of water. The company, Dos Republicas, has an affiliate in Mexico that is already mining low-grade coal and dumping a portion of its waste in to the river, local residents said. A spokeswoman for the company says all regulations are being met, and the company has received its required permit from the Texas Railroad Commission.

A coalition of coal mine opponents, including Maverick County, the city of Eagle Pass, the Maverick County Hospital District and the Maverick County Environmental Association, has filed suit in state district court to have the decision repealed. A hearing is scheduled for February, said George Baxter, the president of the environmental association.

Miller and others in Laredo are also monitoring to see whether the U.S. Border Patrol restarts a project that seeks to rid the U.S. side of the Rio Grande of an invasive species called the Carrizo Cane.

The tall, non-native plants siphon water from the river, but the Border Patrol's interest in removing the brush is to prevent smugglers and would-be illegal crossers from evading detection.

The pilot program, which began in March 2009 and was confined to 25 square acres spanning 1.1 miles in Laredo was suspended just months after it began amid environmental concerns over the aerial spraying of an herbicide.

"The project timeline has been rescheduled to give Border Patrol officials more time to respond to community concerns," a 2009 agency statement said. "To this end, agency officials pledge that aerial

application of herbicide, which has generated the largest amount of community concern to this point, will not be one of methods used when work resumes."

The Border Patrol added that it needed time to clear up the "misinformation" about the project. The public affairs office at the Border Patrol's Laredo Sector did not respond to a request seeking updated information about the eradication efforts.

The clearest example of how international politics affects the Rio Grande is a 1944 water treaty between the U.S. and Mexico. The treaty states that Mexico must provide the U.S. surface water from Mexican tributaries that feed into the river. In turn, the U.S. is to deliver water from the Colorado River. Mexico is supposed to provide 1.75 million acre-feet of water every five years. American officials contend that Mexico should supply 350,000 acre-feet annually, unless prevented by extreme environmental circumstances. Others say Mexico can make good on its delivery at any point during the cycle.

Sally Spener, a foreign affairs specialist with the El Paso-based International Boundary and Water Commission, said that as of Nov. 23, the supply deficit was 275,000 acre-feet, down from 484,000 in June.

The deficit prompted Sens. John Cornyn and Ted Cruz, R-Texas, to file legislation urging Mexico to comply and Gov. Rick Perry to write the Obama administration with a similar demand. But Mexico has not technically violated the treaty. And in certain areas along the Rio Grande, its tributaries are the main supplier of water. Mexico also cites the drought as one reason it continues to hold on to its supply.

At Falcon Lake, a massive reservoir that straddles Mexico at Tamaulipas State and Webb and Zapata counties in Texas, more than 80 percent of the water that is distributed comes from Mexico, Miller said.

Spener hopes future discussions with Mexican officials can resolve the divisive issue.

"One of the things we are really pushing for is to have Mexico, when it works on its water plans for its irrigation districts for the coming year, set aside a specific volume for treaty compliance," she said. It is now the fourth year of a five-year cycle.

Eckstein said that bureaucratic hurdles also affect what stakeholders know about the river and how it is fed. Transnational aquifers, he said, are a mystery because data is not shared across the border. Knowing how many aquifers span the border would inform public use practices and legislation, he said, citing the basics of the hydrological model.

"Groundwater is connected to surface water is connected to groundwater is connected to surface water. It's that simple," he said.

But the closest researchers have come is to claim that anywhere from eight to 20 aquifers lie below the river's surface. Aquifers south of the border do not show up on American researchers' maps, Eckstein said, and the same happens north of the border for the Mexican researchers.

"It's that stupid. We're not, at least not officially, sharing data on a federal government to federal government level," he said.

Despite the current challenges, the river will rebound, if history is an accurate indicator. Miller said that in 1993, the Rio Grande was declared endangered by the American Heritage Rivers Initiative, which addressed the environmental and historical concerns of American rivers. The problem then was pollution and not water levels.

"The E coli counts that had been recorded had been some of the highest," Miller said. "About 20 to 30 million gallons of raw sewage a day from Nuevo Laredo had been the problem."

The problem is nowhere near contained, but inroads have been made. An international wastewater treatment plant funded by both nations was completed in 2000 and has helped alleviate the problem, though infrastructure problems in Nuevo Laredo continue to cause raw sewage to flow into the river.

The river was also declared endangered in 2001, when it dried up in some spots. Again, it has rebounded, but Miller said conservation efforts must become a priority if the river is going to sustain the estimated population explosion on the border in the coming decades. The population on the Texas border is expected to double in about 20 years.

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