



# ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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



## ORSAM WATER BULLETIN

*01 December – 07 December 2014*

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### ❖ Normalization of Turkey-Iraq relations

*Turkey's relations with Iraq have been less than cordial for several years. Many factors contributed to this situation, but outgoing Prime Minister Nouri al-Maliki's pro-Shiite policy was the most important one. Turkish Prime Minister Ahmet Davutoğlu paid a visit to Baghdad on Nov. 20 to give new impetus to bilateral relations. "We want to turn the page of the past and improve relations with Iraq," he said. Whether this will be achieved will depend on a multitude of factors.*

There are new elements that may support an improvement in relations. One of them is the need for coordinated action to fight the Islamic State of Iraq and the Levant (ISIL). The biggest damage by ISIL was inflicted on Iraq, the reputation of its army and its territorial integrity. Iraq is therefore looking for as many friends as possible to fight against ISIL. As for Turkey, now that ISIL threatens the border stations at the Turkish-Syrian frontier, there is an additional need for it to cooperate with countries that are also threatened by ISIL. The two prime ministers said after their meeting that they agreed on "modest cooperation against ISIL, such as sharing information and some military cooperation." No matter how modest, this is a sound beginning.

The treatment of Sunnis by the Maliki government was less than fair, but it is difficult to predict to what extent the government formed by Haider al-Abadi will be able to restore the damages inflicted by Maliki. The complicated political balance struck in forming the government contains elements of fragility. One can only hope that the stakeholders will understand that the cost of the collapse of this compromise government can be more costly to them than any additional advantage they may be seeking.

Turkey was accused of looking at the developments in Iraq and in the Middle East at large from a Sunni-inspired sectarian standpoint, but Turkey made efforts to distance itself from this label. If in the future there will be a country that would lead the Sunni belt in the Middle East, such a task will more suit a country like Saudi Arabia than a secular country like Turkey.

Another factor that will affect Turkish-Iraqi relations is the strong Iranian influence on the Iraqi government. The Shiite majority in Iraq, the deep-rooted Shiite implantation in almost every crucial public office and the very active Iranian presence in Iraq will all play a role in shaping Turkish-Iraqi relations.

The oil deal agreed between Turkey and the Kurdistan Regional Government (KRG) of Iraq will remain an important issue in relations between Turkey and Iraq. The absence of an agreement between Baghdad and the KRG on how oil revenues have to be shared was obstructing the export of Iraqi oil. It was damaging the interests of Iraq, the KRG and Turkey.

Prime Minister Davutoğlu also visited Arbil after Baghdad. He discussed with President Massoud Barzani of the KRG this subject as well other issues of common interest. If this unnecessary hurdle is removed between Baghdad and Arbil, both sides will greatly benefit from the sale of oil flowing to international markets, and Turkey will be utilizing the pipeline that is working under capacity between Kirkuk and İskenderun and also its storage capacity in the Mediterranean harbor of Ceyhan.

A potential disagreement that may cast a shadow over Turkish-Iraqi relations is the transboundary water issue. It is not being voiced at the present stage, but the Iraqi parliament refused in 2009 to ratify an economic partnership agreement with Turkey “until the water issue is resolved between the two countries.” Turkey and Iraq do not see eye-to-eye on this subject. Iraq wants more water from the Euphrates and Tigris rivers, and it considers this an issue of paramount importance. Turkey is in favor of a framework that resembles more a joint management of water rather than committing itself to allocating a certain quantity of water irrespective of precipitation or atmospheric conditions.

No matter what the final outcome is, a move in the right direction in Turkey's relations with Iraq has to be regarded as a very welcome development.

“Normalization of Turkey-Iraq relations”, Yaşar Yakış, 03/12/2014, online at:  
[http://www.todayszaman.com/columnist/yasar-yakis/normalization-of-turkey-iraq-relations\\_365996.html](http://www.todayszaman.com/columnist/yasar-yakis/normalization-of-turkey-iraq-relations_365996.html)

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### ❖ Water-borne disease plagues ISIS-held city of Mosul

BAGHDAD: When ISIS fighters swept into northern Iraq's second city Mosul in a lightning June offensive, their propaganda trumpeted a better life for the people under jihadi rule.

Nearly six months later, residents are suffering from a lack of clean water and also a shortage of medicine to treat illnesses caused by it.

The group's latest name, "Islamic State," is a clear pointer that the group seeks to rule as well as to conquer, having declared a cross-border "caliphate" spanning parts of Iraq and Syria.

But despite spearheading the June offensive that also overran the surrounding Nineveh province and swaths of other territory, ISIS has been unable to provide basic services in these areas, ultimately undermining the state to which it aspires.

"The impression given in [ISIS'] propaganda is a group offering a better quality of life than before that is also more just for locals," said Aymenn al-Tamimi, a fellow at the Middle East Forum who is an expert on jihadi organizations.

But "the hardships of the locals ... undermine [ISIS'] claims to be a state meeting the needs of the people and offering them real security."

One resident of east Mosul whose wife became ill because of contaminated water said by telephone that the "disruption of the water treatment stations" had led to sickness among many people.

"The biggest and most dangerous problem now is because of our harsh circumstances and the absence of services," Abu Ali said.

Some people have even turned to digging their own wells to get water because of interruptions in the mains supply, which Abu Ali said could be cut for a day or even a week.

Problems with basic services already existed in much of Iraq before this year's crisis erupted, but these have been compounded in Mosul by skilled government employees fleeing jihadi rule.

"Treatment stations are old and the water distribution networks are damaged," a water treatment official in Mosul said, adding that there was now a shortage of workers as well.

At Mosul General Hospital, one doctor said the facility had admitted 15 people infected by contaminated water in just 24 hours – and there are nine other hospitals in the city.

A doctor at Republican Hospital said it too had received a large number of people, especially children, who had become sick, and that stomach and intestinal infections and hepatitis were on the rise.

As the number of ill people increases, there is a corresponding shortage of medicine available to treat them.

One official in the Nineveh provincial health department said stocks of drugs were running low and the Nineveh Pharmaceutical Company had stopped operating.

“Communication with government institutions has been cut and we have not received any budget to allow the provision of the medicines we need,” the official said.

Umm Mohammad, a resident of west Mosul who brought her 10-year-old son to Republican Hospital for treatment, said: “There is a major shortage of medicine needed to treat these sick people.

“The roads are closed and Mosul has turned into a big prison that we can’t leave,” she said.

Expensive private pharmacies are now the only option, she said. “How will the poor get medicine?” she asked.

A 29-year-old woman from southern Mosul brought her daughter Shaima to Mosul General. “My daughter has not stopped crying and suffering from stomach pains” since the day before, she said.

For now, there would appear to be little immediate hope of the problem being resolved.

While Iraq’s army and allied forces are engaged in an anti-ISIS offensive, the key cities of Mosul, Tikrit and Fallujah remain in jihadi hands.

And while Kurdish forces and elite federal forces have battled ISIS in Nineveh province, they would have to make significant advances to pose a credible threat to the militants holding Mosul.

“Water-borne disease plagues ISIS-held city of Mosul” , 02/12/2014, online at:  
<http://www.dailystar.com.lb/News/Middle-East/2014/Dec-02/279579-water-borne-disease-plagues-isis-held-city-of-mosul.ashx>

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## ❖ A-10s Defend Western Iraq's Strategic Dam

*U.S. Air Force attack jets fly low to fire powerful cannons*

It appears American warplanes—including low- and slow-flying A-10 Warthog attack jets—have struck Islamic State forces in western Iraq, possibly in order to protect the strategic Haditha Dam.

A video posted to Youtube depicts at least one A-10—the heavily-armored planes usually fly in pairs—circling over a town, firing its devastating 30-millimeter cannon at targets on the ground. The gun's distinctive *buuuurp* sound is clearly audible.

It's not surprising that the A-10s would go into action over Rawa. The town is just a few miles from Haditha Dam, which regulates water supplies for much of Iraq. Rawa *and* the dam lie on the outskirts of Ramadi, one of western Iraq's major cities.

Islamic State militants invaded western Iraq's Al Anbar province in early 2014, easily capturing Fallujah and other cities and towns. The militants seized Rawa in June. Pro-U.S. Sunni tribesmen have reportedly infiltrated Rawa to fight the Islamist occupiers from within the town.

Baghdad's troops still hold both Haditha Dam and Ramadi—but only barely. The A-10s are a major boost to the area's defenses.

A dozen or so Warthogs from the Indiana Air National Guard's 122nd Fighter Wing [arrived in the Middle East](#)—at a base in Kuwait, apparently—in mid-November.

The deployment came amid a heated debate over the future of the Air Force's roughly 300 A-10s. The flying branch wants to retire the decades-old attack jets in order to free up money and people for new F-35 stealth fighters.

But critics have pointed out that the powerful, heavily-protected A-10 can do things that no F-35 can—namely, fly low and slow and attack enemies just yards from friendly troops. Moreover, the



A-10 is cheap. It costs just under \$400 million a year to fly all 300 Warthogs, which the Air Force purchased in the 1970s and '80s.

To quiet the A-10's supporters, the Air Force [suppressed a documentary](#) that its own public affairs branch made about the Warthog. Still, Congress rejected the Air Force's proposal to retire the attack jets, adding money to the Pentagon's 2015 budget to keep most of the planes in the air.

The Air Force has been coy about the A-10s in Kuwait. "They're going over there because there's a need ... to be postured for a combat rescue mission," Jennifer Cassidy, an Air Force spokesperson, [told Stars and Stripes](#).

While it's true that A-10 pilots train to protect rescue helicopters retrieving downed pilots, the Warthog fliers are equally adept at smashing enemy vehicles and infantry during intensive ground fighting.

And that's exactly what the A-10s appear to be doing over Rawa, aiming low to blast Islamic State with their cannons, helping to protect Haditha Dam and the millions of Iraqis who depend on the dam.

A-10s Defend Western Iraq's Strategic Dam, 06/12/2014, online at: <https://medium.com/war-is-boring/a-10s-defend-western-iraqs-strategic-dam-38ebb44547ff>

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### ❖ Iraq refugees make do with inadequate shelters amid space crunch in camps

Some refugees who fled the Islamic State have been living in a half-built shopping mall in northern Iraq, as the large number of displaced means some are unable to get shelter in purpose-built camps.

ERBIL: Since the Islamic State began its onslaught on Iraq in June, Kurdistan has taken in more than one and a half million displaced people.

This is on top of an estimated 250,000 Syrian refugees who have fled to the autonomous region in northern Iraq. Many have been placed in purpose-built refugee camps but the huge numbers mean thousands of others are forced to live in inadequate, makeshift shelters.

The Ankawa mall, located in a Christian suburb of Erbil, was originally intended to house high-end stores to cater to Kurdistan's growing consumer economy. But refugees have been taking shelter in the half-built shopping mall in the outskirts of the city.

In August, in fear of Islamic State fighters, Habiba Benham fled her hometown of Qaraqosh, seeking refuge in the relative safety of Kurdish-controlled Erbil. She has been living in Ankawa mall, where she shares a small room with six other members of her family.

"We're entering our fourth month here. The electricity is bad, there's no hot water, and my grandchildren aren't going to school," she said. "It would be better for us to go back home, even if it means living in a tent."

About 1,600 other Christian refugees have also made the mall their makeshift home.

Dr Viyan Yusef is one of the aid workers who have been trying to improve the lives of residents in the mall. He runs the Kurdistan Medical Charity Foundation, which provides basic medical care for refugees. But the problems can sometimes seem insurmountable.

"There's a lack of hygiene so there are a lot of cases of diarrhoea and renal problems due to dirty water," he said. "The Kurdish government has provided some medication and we're grateful for their support but Kurdistan is overstretched because there are so many displaced people in the region."

The psychological wounds of homelessness and poverty cut even deeper, according to a committee member of a church that helps to run the camp.

"The people here have lost their homes and their jobs, and many of the families don't have any income at all. They are in a very bad psychological situation," said Ibrahim Shahib. "Our history and our culture have been eradicated. We are going to have to begin again from zero."

"Iraq refugees make do with inadequate shelters amid space crunch in camps", 07/12/2014, online at:  
<http://www.channelnewsasia.com/news/world/iraq-refugees-make-do/1514726.html>

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### ❖ A bleak history of Israeli fuel pollution

The huge spill near Eilat is only one of many problems around the country, the Water Authority says. Israel's fuel-pollution problem has been similar over the past decade as it is now in the area racked by an oil spill, Water Authority data show.

Over the past decade or so, 2.5 million liters of fuel have been cleaned up at a third of locations known to be polluted. This compares with the 3 million liters estimated to have spilled due to the pipeline burst near [Eilat in the south last week](#).

The Water Authority only began monitoring such pollution in 2004; it has since required companies to address the problem. Israel has 1,400 kilometers (870 miles) of fuel pipelines and 19 fuel-storage facilities, each with a capacity of tens of thousands of cubic meters.

Israel also has about 1,000 retail gas stations, 180 other gas stations, an unknown number of pirate gas stations and tanks at various plants, military bases and residential sites — both above- and belowground.

By the end of 2013, the Water Authority had drilled at 640 fuel-storage sites to monitor pollution. It detected pollution at 190 locations, the vast majority involving pollution of groundwater, the authority has said in a report.

Last year, groundwater pollution was found at all 14 gas stations investigated. In recent years, gasoline has been found to have polluted 10 wells up to 400 meters away used for drinking water.

Also last year, large quantities of fuel were extracted from the grounds of the Haifa oil refinery and state-owned company Petroleum & Energy Infrastructures.

Cleanup operations have been carried out at nearly a third of the polluted locations. Since the middle of the past decade, more than 2.5 million liters of polluting fuel has been cleaned up — close to the 3 million liters afflicting the Arava nature reserve near Eilat.



Among 17 fuel-storage facilities inspected, 13 were polluted. Among seven pipelines, five had pollution problems.

At many polluted sites, fuel floats on groundwater. Some of this fuel has broken down and mixed with the water.

A badly afflicted site was discovered back in 1983 at the Hatzor air base south of Tel Aviv. The problem was addressed partly due to pressure from groups such as the Israel Union for Environmental Defense, which six years ago filed a petition to the High Court of Justice.

According to the Water Authority, efforts to clean up Hatzor began about two years ago. Pollution dozens of centimeters deep was found in groundwater.

The area affected was also larger than initially thought. The cleanup will require pumping in order to lower the groundwater level by two meters to ensure that the fuel has been extracted.

Fuel components are considered carcinogenic and can affect the nervous and immune system, as well as cause fertility problems. As a result, Israel has set strict water-quality standards.

But the Water Authority and the Environmental Protection Ministry are concerned that even a small quantity of fuel can pollute large amounts of water if the fuel seeps into the groundwater.

“A bleak history of Israeli fuel pollution”, 07/12/2014, online at: <http://www.haaretz.com/news/national/.premium-1.630420>

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## ❖ A Tree Grows in Gaza

An olive branch is a universal symbol of peace, but as the decades-long struggle between Israelis and Palestinians continues, it has become yet another source of conflict.

In the West Bank and Gaza, almost half of the arable land is planted with olive trees, from saplings to some that have produced fruit for a thousand years. Nearly 80,000 Palestinian families depend on the annual fall olive harvest for their livelihood. But in recent decades, the conflict in the region, which recently flared up once again, has taken a devastating toll: Israeli settlers and military personnel have cut down, uprooted and burned an estimated 800,000 olive trees since 1967, including approximately 49,000 in just the past five years, according to the UN Office for the Coordination of Humanitarian Affairs.

The Union of Agricultural Work Committees of Palestine (UAWC) wants to turn this dire situation around. Ali Hassouneh, the group's board chair, believes that the olive groves represent a shared inheritance. "If I have an olive tree that is 1,500 years old, I think: Who planted it? How many thousands of people have eaten from it? The trees are our heritage – my heritage and [the Israelis'], too." The UAWC, one of the oldest Palestinian NGOs, has worked with farmers in the West Bank and Gaza on water and land access since 1986. It also provides annual support with the olive harvest.

The walls separating the West Bank and Gaza from Israel cut through many Palestinian farms, separating families from their orchards and grazing lands. Farmers cannot cross the wall regularly to tend their trees and other crops; they must apply for a special permit for the olive harvest. According to the UN, as many as 42 percent of these permit requests have been denied in recent years. Those who do get a permit often face harassment and violence, and they sometimes arrive only to find their trees destroyed.

The UAWC brings hundreds of local and international volunteers to provide labor, solidarity and protection for the harvest, as they say that the presence of volunteers reduces violence.

If I have an olive tree that is 1,500 years old, how many thousands of people have eaten from it?

Construction on the West Bank wall began in 2002, a year in which 47 suicide bombings targeted Israeli citizens. In that context, writes Colonel Danny Tirza of the Israeli Defense Forces, the wall's

chief architect, “The security fence was an essential defensive move taken by the Israeli government in order to protect its citizens,” and indeed, suicide bombings and other attacks on Israelis have fallen dramatically since construction of the wall and concurrent developments such as a Hamas ceasefire.

But in the Palestinian territories, where unemployment can run as high as 40 percent, Palestinian farmers’ olive trees are a vital source of income and food. And those aren’t the only benefits. “Agriculture is a tool of resistance, of independence ... of freedom. If you have your food, even if you’re poor, you can survive,” says Hassouneh.

The UAWC was built on this philosophy. Originally an informal coordinating body for agricultural workgroups in communities throughout the territories, the union formalized just before the first Palestinian intifada — or uprising — in 1987. The group began promoting self-sufficiency: distributing seeds, helping Palestinians to plant gardens and developing farmland. Hassouneh says that UAWC members — himself included — were sent to jail for these activities, but home gardens and urban agriculture helped Palestinians to survive the strict blockades and curfews of the period.

More than 25 years later, although as many as 90 percent of Palestinians are economically involved in agriculture, the sector is struggling. According to a 2012 UN report, “The [Palestinian] economy has lost access to 40 percent of West Bank land, 82 percent of its ground water, and more than two thirds of its grazing land. In Gaza, half of the cultivable area ...[is] inaccessible.” The UAWC has its work cut out for it.

The group supplies goods such as feed at cost and provides technical assistance for projects such as rainwater collection or constructing livestock shelters. The union coordinates several women’s cooperatives focused on farming, textiles and food products, where the women learn critical marketing and business skills that allow them to enter the work force. Female unemployment in the territories was almost 35 percent in 2013; projects like a successful beekeeping cooperative in the West Bank allow women to support their families and gain economic independence from their husbands.

The group is continuously adapting to meet the needs of farmers. In 2003, the union learned that the very seeds on which their members depended were at risk —the local seed varieties, bred over centuries, were disappearing due to both poor weather conditions and pressure on farmers from seed

companies to buy modified seeds. The UAWC began a seed improvement program and opened a seed bank in 2009. The bank, only the second of its kind in the Middle East, is actively engaged in research as well as preservation, using pollination and grafting to further improve varieties for the local environment. It provides several hundred families with seed every season, with the condition that they return a portion of their seeds to the bank after harvest.

The UN recognized the seed bank this year with the Equator Prize for local sustainable development, and the UAWC was awarded the Food Sovereignty Prize last month. Food sovereignty is not just about having enough to eat, but also about having control over food and farming policies and practices. It's not just about survival, but also self-determination.

In the spirit of self-determination, many Palestinian farmers keep replanting their olive trees. Hassouneh tells a story about visiting farmers near Hebron, where there are almost no roads, water or electricity. "The farmers suffer the most from occupation," he says. "But they are hard at work planting and taking care of their land." Given high unemployment, poverty and lack of control over land and water, for Palestinians, "The importance of agriculture is not how much it contributes to GDP or how many people it employs. The importance is this: if you live in a village and you have a tree, you are not hungry. You can live."

"A Tree Grows in Gaza", 05/12/2014, online at: <http://modernfarmer.com/2014/12/profile-union-agricultural-work-committees-palestine/>

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### ❖ Audio: Israel is World Leader in Water Resources Management

It is such a pity, that our so-called Palestinian Arab neighbours expend their energy in deluding themselves to believe that they will one day soon inherit the Land of Israel. They would do better to educate their children to understanding that peaceful coexistence is they way forward to a successful life. But then, they seem to prefer death to life.

**And:** Drinking water is the most important commodity for the sustenance of life -and in some parts of the world, including ours it is in short supply.

Hear about the largest and most advanced seawater desalination plant in the world. It's in Israel of course.

**Also:** How Israel leads in domestic waste-water treatment technology and conserves its water resources. Research work continues to reduce CO2 emissions in solar energy as well.

“Audio: Israel is World Leader in Water Resources Management”,07/12/2014, online at:

[http://www.israelnationalnews.com/Radio/News.aspx/5945#.VIVi\\_jGsVz9](http://www.israelnationalnews.com/Radio/News.aspx/5945#.VIVi_jGsVz9)

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### ❖ A Sister Cities Coalition Builds Peace Through Water in the Lower Jordan Valley

Water is a key ingredient for peace, especially in the Middle East. The Jordan River, which forms the border between Israel, the Palestinian West Bank, and Jordan, is central to the interrelated political and environmental challenges facing the region. Addressing these challenges requires not only high-level diplomacy but also direct, people-to-people engagement, which can form lasting relationships that go beyond water, said experts at the Wilson Center on [October 17](#). [Video Below]

Representatives of [EcoPeace Middle East](#) (formerly Friends of the Earth Middle East), [Citizen Diplomacy Initiatives](#), and [Sister Cities International](#), along with local government leaders from Israel, Jordan, and the Palestinian West Bank, came together to discuss grassroots peacebuilding efforts in the region and the potential to expand through multilateral “sister city” relationships with U.S. communities.

#### A Shared Problem

The Lower Jordan River has sadly “become famous for being a sewage canal,” said Gidon Bromberg, Israeli director of EcoPeace Middle East.

Contamination from wastewater is a pressing problem in the Palestinian West Bank, [where treatment facilities are scarce](#), due in part to the ongoing conflict. “People just discharge their sewage through infiltration pits or cesspits, which is a big risk for pollution,” said Nader Khateeb, Palestinian director of EcoPeace Middle East. “The sewage can easily find its way to the groundwater, which is the major source of water for all sectors.”

The Jordan Valley covers almost a third of Palestinian West Bank and contains nearly 60,000 Palestinians and 9,000 Israeli settlers. But Palestinians have been denied access to the river since 1967. Almost all of the land is designated “Area C,” meaning it falls under full control of the Israeli government, which may or may not approve water development projects, Khateeb said.

The sacred town of Jericho, which celebrated its 11,000<sup>th</sup> anniversary last year and is “the oldest town on earth,” only just received a modern sewage system, he continued. And Al Auja, a farming community of 4,500 residents, [lacks running water](#) after a major spring dried up due to climate change and withdrawals by Israel and the Palestinian city of Ramallah.

But the degradation of the valley is an urgent problem for Jordanians, Palestinians, and Israelis alike, said Ali Al-Delki, mayor of the Jordanian municipality of Muaz Bin Jabal. “It needs all of us, it needs a lot of effort, and that effort needs political will and political support.”

“We see the Jordan River as an intersection of interests, and therefore the need for cooperation,” said Yossi Vardi, an Israeli major and member of the Jordan Valley Regional Council, which oversees a number of Israeli settlements.

### Environmental Peacebuilding

EcoPeace is working to address the problem by advocating for a “fair share of transboundary water,” seeking Israeli approval for water projects, supporting infrastructure rehabilitation and development efforts, and conducting environmental education and ecotourism through its [EcoCenters](#), said Khateeb.

The [Good Water Neighbors](#) project “has brought together Palestinian, Israeli, and Jordanian youth, adults, and municipal representatives from 28 communities to cooperate over transboundary water resources and jointly advance sustainable development in the region,” said Melissa Brown, director of USAID’s [Office of Conflict Management and Mitigation](#), which helps fund the effort.

EcoPeace is the only organization – environmental or otherwise – jointly run by Israelis, Palestinians, and Jordanians, said Bromberg. “Sadly, there’s no parallel to it in any other field.”

One focus is research, which allows scientists from all three territories to jointly investigate and address shared environmental problems, like water pollution, said Bromberg.

In the Palestinian village of [Battir](#), now a UNESCO World Heritage site, EcoPeace supported Israelis and Palestinians in preventing the construction of an Israeli-proposed separation barrier that would have endangered an ancient and culturally important agricultural landscape, said Bromberg.

The Jordan Valley Regional Council is implementing a project to develop tourism and restore the valley’s biological diversity – including willow trees, which once flourished along the riverbanks but were later killed off by pollution.

## Incentives for Cooperation

“We also know,” said Bromberg, “that to change policies it’s not enough to write reports.” EcoPeace directly engages individuals from opposing sides to raise awareness of one another’s “water realities,” which can be strikingly different, he said.

When you turn on the tap in any community in Israel, water will always flow. That’s not the case in Palestine, and it’s not always the case in Jordan either. And there are reasons for it, so it’s important for youth to understand those reasons – and a lot of those reasons are conflict-related.

Educating conflicting constituencies, especially young people, about their environmental interconnectedness can help create political will for change, said Bromberg.

“A thirsty neighbor will never be a good neighbor,” he said. At the same time, “no fence, no political boundary stops pollution from flowing from one side to the other.”

Opposing leaders are often reluctant to collaborate because of potential political costs, but framing environmental cooperation in terms of self-interest can help overcome this challenge, he said. People cooperate “not because someone is doing someone else a favor – because favors generally don’t last, and certainly not in conflict – [but] because they have a sense that they’re advancing their own interest.”

This combination of cross-border engagement and environmental education is working, said Bromberg. Local leaders are recognizing that “allowing that river to continue to flow is not empowering my enemy, it’s empowering my *neighbor* – and I *want* to empower my neighbor.”

Speaking at the Wilson Center [earlier this year](#), Bromberg recalled an event in which mayors jumped into the Jordan River together to demonstrate their shared interest in cleaning it up, as well as the progress made in making it swimmable.

## Sister Cities

The Middle East conflict has implications that extend beyond the region, said Steve Kalishman, director of Citizen Diplomacy Initiatives. “This is not an Israeli-Jordanian-Palestinian problem; it’s an American problem.”



EcoPeace, [Sister Cities International](#), and [Citizen Diplomacy Initiatives](#) signed a memorandum of understanding to expand on the success of the Good Water Neighbors project by connecting communities in the region to those across the Atlantic. The initiative will incorporate U.S. cities into established Good Water Neighbors relationships and provide a chance for American “citizen diplomats” to engage in peacebuilding efforts.

“We want the Jordanian, and Palestinian, and Israeli youth to participate in these types of exchanges so in 20 to 25 years, those are the people sitting across from you at the desk when you’re talking about policy and some of these upper level issues,” said Adam Kaplan, vice president of Sister Cities International.

Bringing conflicting parties together to address shared environmental problems is essential in itself, but also promises [long-term peace dividends](#) that transcend a particular sector or cause.

“Once you build trust on one issue – water in our case – there’s no limitation as to where that trust can take you,” said Bromberg.

“When you get people together and build trusting relationships, everything is possible,” agreed Kalishman, who talked about his experience doing exchanges between American and Soviet communities at the height of the Cold War.

## Beyond the River

Although enduring peace in the region is not yet a reality, efforts to restore the once-mighty Jordan River – including not only locally led initiatives, but [Israel’s release of flows from the Sea of Galilee last year](#), a [USAID-funded wastewater treatment and desalination plant](#), and a [Japanese-funded sewage system in Jericho](#) – offer reasons for optimism.

“There can be no peace without the leaders signing a peace treaty,” said Bromberg. “But what we also know [is] that in order to get there, it doesn’t just happen; it requires support.”

Fostering direct citizen engagement is a critical part of that support, said Munqeth Mehyar, the Jordanian director of EcoPeace Middle East. “Politicians must sign papers at the start, but the rest is up to the people.”

“It’s that bottom-up effort,” said Bromberg, “that creates the absolutely necessary constituencies – in your communities, in our communities – to get to that signing ceremony, to get to the peace that we all so desperately desire.”

“A Sister Cities Coalition Builds Peace Through Water in the Lower Jordan Valley”, 04/12/2014, online at:  
<http://www.newsecuritybeat.org/2014/12/sister-cities-coalition-builds-peace-water-jordan-valley/>

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## ❖ Israel to Build Water Barrier Along Jordan and Egypt

PNN correspondence reported, Sunday, that Israeli sources plan to build the intended barrier 2.8 miles high.

Israeli sources claim that the troubled security conditions in Egypt have forced Israel to make this decision to abort any attempt from outsiders to sneak into "Israeli beaches".

Though security in Egypt remains on high alert, President Abdel Fattah al-Sisi, has recently expressed concern for the Palestinian cause, going so far as to say that he would be prepared to send in troops in support of future Palestinian state, in order to help stabilize it.

According to Walla Israeli news, Israel has already started the construction process to build a water barrier along the borders with Jordan, in Aqaba.

In related news, PNN reports that Israeli Foreign Minister Avigdor Lieberman, on Friday, proposed on his Facebook page and his party's website, that the Israeli government should offer "economic incentives" for Palestinian citizens of Israel, in order to encourage them to leave the country and move to their planned independent Palestinian state.

With the headline "Swimming Against the Stream", Lieberman stated: "Those [Palestinians in Israel] who decide that their identity is Palestinian will be able to concede their Israeli citizenship and move and become citizens of the future Palestinian state. Israel should even encourage them to do so with a system of economic incentives."

Lieberman has always called for division of Jews and Palestinians, and he is one of the most strident of those suggesting separation of the population.

"Israel to Build Water Barrier Along Jordan and Egypt", 01/12/2014, online at: <http://www.imemc.org/article/69875>

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### ❖ The half-full glass: Could 'water diplomacy' bring peace to the Mideast?

Water could be the main factor in even bloodier conflicts than those we have become accustomed to. But it doesn't have to be that way: Water could also be a source of security, prosperity and peace. We should not let ourselves be fooled by the rainstorm that lasted for several days this week. The Middle East has always had a water shortage. Conflicts and treaties over water are mentioned as far back as the Bible, and recently the journal Climatic Change published a study claiming that a drought was responsible for the collapse of the Assyrian Empire 2,700 years ago. A water shortage and population density are still typical of the region, and even though political and religious circumstances play a part in the conflicts and treaties of our own day, the role of water cannot be discounted.

Advanced technology, desalination and water recycling have helped Israel to overcome its initial disadvantages and become a kind of regional water superpower. The gap between the bleak water situation in the neighboring countries and Israel's much better one is the key to understanding the future of the Middle East. Estimates say that while almost 634 million people will be living in the Middle East by 2050 – that's double the current population – the water sources are drying up and the amount of precipitation is decreasing.

Water could be the main factor in even bloodier conflicts than those we have become accustomed to. But it doesn't have to be that way: Water could also be a source of security, prosperity and peace. This vision brings with it the concept of "water diplomacy," a hot field in international relations that is based upon a simplistic equation that states: "A thirsty neighbor is a dangerous neighbor."



## **Catastrophe or peace**

In Amman, Jordan's capital, 50 percent of the water leaks out of the pipes and inhabitants receive water twice every two weeks. Roughly 10 million cubic meters of water evaporate from the Aswan Dam every year, to be lost forever. In the Nile Delta, near Cairo, the water has become an open sewer into which millions of inhabitants empty their waste. In Turkey, dams are being built at the sources of the Tigris and Euphrates rivers, preventing the water from reaching Syrians and Iraqis. Tehran has running water, but the inefficient sewerage system there causes sewage to leak into the groundwater. The groundwater in Kuwait is full of oil that trickled into it when it was poured out during the first Gulf War. Since the second Gulf War, roughly 70 percent of the population in the areas where combat took place have not been receiving a steady supply of water.

By comparison, inhabitants of Israel, which started out with the toughest situation of all (besides Jordan), enjoy a constant, steady water supply, and farmers receive as much water for their crops as they need. "Thanks to strategic management, which includes reuse of water for agriculture, desalination of seawater, reducing the rate of waste, establishment and maintenance of good and effective systems and proper pricing of water, Israel's water economy is stable and good," says Oded Fixler, senior deputy director of the Water Authority.

Avraham Tene, chairman of the Water Desalination Administration at the Water Authority, adds that the average amount of precipitation in Israel is 1.2 billion cubic meters, while we consume roughly 2.2 billion cubic meters. "We make up the difference with technology, water conservation, recycling and returning water to agriculture and desalination," he says.

A visit to the Palmahim Desalination Plant shows how water facilities in Israel have become a pilgrimage site for researchers and scientists from all over the world. It takes 20 minutes for a drop of water to complete the desalination process and become drinkable.

“The plant stops desalination work at peak electricity consumption times to keep costs down, while at the same time using energy provided by salt water that remains after the desalination process,” explains Avner Hermoni, the director of the plant.

As expected, Energy and Water Resources Minister Silvan Shalom has the highest praise for Israel’s water economy. “Israel recycles 87 percent of its water, much more than any other country on earth,” he says. “Second place is 25 percent, and third place is 10 percent. We also use desalination wisely and we water our crops with drip irrigation systems, which were invented here back in the 1960s.”

“We can take a pessimistic or an optimistic view,” says Prof. Haim Gvirtzman, a hydrologist at the Institute of Earth Sciences at the Hebrew University of Jerusalem. “Either a holocaust, in the sense of a regional catastrophe, will happen here or Israel can export its successful water model to the region’s countries as part of peace treaties. I take the optimistic view – water is a bridge to peace.”

### **Oil is losing its importance**

As we approach the second half of the second decade of the 21st century, it may be said that the predictions of a regional water apocalypse did not come true. But there were still internal conflicts, many of them fueled by a shortage of water.

Micheline Calmy-Rey, the former foreign minister of Switzerland, had good reason to announce in 2011 that in the future, the most important geopolitical resource in the Middle East would be water, not oil. Much has been written about the connection between the drought in Syria, which lasted from 2006 to 2009, and the outbreak of the civil war there, and naturally, water is one of the weapons being used in the ongoing fighting there. Islamic State's takeover of the Tabqa Dam on the Euphrates River in Syria's Raqqah Governorate in February 2013 was one of the worst blows that the Syrian regime has suffered during the war.

The field that the United Nations calls "environmental diplomacy" (water diplomacy is one of its subcategories) is definitely necessary in a region where more than 50 percent of the water sources are shared by two or more countries. The most prominent example of this is the Tigris River, which passes through Turkey, Iran, Syria and Iraq.

"Environmental issues are unique in that they can make connections between people in ways that other fields, mainly political ones, cannot," says Gidon Bromberg, the Israeli director of Friends of the Earth Middle East.

Officials of Friends of the Earth are about to publish a long article in the International Journal of Water Governance, a scientific journal, claiming that the water crisis, and the environmental problems of the Middle East in general, can be the keys to opening the gates of peace. In their article, they write that a look backward over the history of water problems in the world shows that contrary to the theory that water shortages lead to conflict, the lack of fresh water actually promotes cooperation between countries.

Sinaia Netanyahu, the chief scientist of the Environmental Protection Ministry, clarifies the issue of possible cooperation among countries in the region and cites the countries of Europe, which are connected to the same power grid and transfer electricity to one another when necessary, as an example.

Francesca de Chatel, a Dutch researcher specializing in water issues in the Arab world and the Mediterranean region, recently received her doctorate from the Institute of Science, Innovation and Society at Radboud University in The Netherlands. Her dissertation topic was the water crisis in Syria – and she is pessimistic regarding a solution to the water problem in the Middle East. She has visited every country in the region, paying particular attention to water and the cultural relationship to it. For example, she studied the different approaches toward water in Christianity, Islam and Judaism, and interviewed thousands of people living in the Middle East.

De Chatel says that while people are aware that there is a water problem in the region, they do not understand how critical the problem is. She adds that governments cannot deal with the problem at present, and definitely cannot create long-range policy on the issue.

Despite her pessimism, de Chatel does not believe that wars over water will be breaking out here – for the simple reason that war is more expensive than finding a solution to the water crisis. She recalls that a high-ranking Israeli general told her: “There is no reason for us to conquer the Jordan River basin as long as it is cheaper to desalinate water.”

De Chatel is also skeptical of the possibility that Israel will sell desalinated water to its neighbors since most of the countries are too poor to buy it. While desalination itself is fairly inexpensive (the desalination process comprises roughly 13 percent of the price of water for consumers), transporting water is a costly affair. But, she says, internal conflicts and uprisings by a thirsty populace against the government, as happened in Tunisia, Libya, Egypt and Syria, will increase.

### **Water as a weapon against Islamic State**

Although the price of transporting water is high and the country in question is a poor one, the water agreements between Israel and Jordan, which went into effect when both countries signed a peace treaty in 1994, have been a shining success. For 20 years, Israel has been providing the Kingdom of Jordan with 55 million cubic meters of water per year. Besides the fact that providing water to Jordan is part of the peace treaty, Israel also has a political-security interest in doing so.

“Security stability in Jordan and preventing the undermining of the current regime are important to Israel,” says Dr. Oded Eran, Israel’s former ambassador to Jordan and the European Union and today a senior research fellow at the Institute for National Security Studies. “Jordan faces two existential threats: One is the entry of a million-and-a-half Syrian refugees on top of the half-million refugees from Iraq who arrived there in 2003, joining the previous waves of Palestinian immigration of 1948 and 1967. The other is posed by Islamic State, which has infiltrated it with local cells, mainly in places where there is a water shortage that causes economic hardship.”



But while the water agreements with Jordan rise above political differences of opinion, among the Palestinians water and politics are intertwined. De Chatel believes that ideological differences are keeping the issue from being resolved.

“While Israel believes that the transfer of desalinated water to the Palestinian Authority solves the problem, the Palestinians view as highly important what they call ‘the right to water’ – the idea that the PA can be responsible for the water sources in the territories, which Israel does not allow them to do at the moment,” she says.

Both the PA and Israel must also deal with the question of Gaza, which suffers from contaminated water sources due to overuse and the lack of sewage treatment plants. Because of the shortage, people drill private wells, which only makes matters worse. An international project to construct a desalination plant in Gaza has been around for some years, but has not yet been carried out.

To help the inhabitants of Gaza receive more water, Israel has two options: either to sign agreements for continued provision of water to Gaza, as it did after Operation Protective Edge when it transferred five million cubic meters of water to Gaza as humanitarian aid, or allowing Gaza to operate a desalination plant and assist it by providing power to run it. A desalination plant of this kind might also be an important factor in preventing the next war.

“The half-full glass: Could ‘water diplomacy’ bring peace to the Mideast?”, 29/11/2014, online at: <http://www.haaretz.com/news/middle-east/premium-1.629046>

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### ❖ Series Preview: The Geopolitics of Water Scarcity

**David Judson:** Hello, I'm David Judson, Editor-in-Chief of Stratfor. Joining me today is Rebecca Keller, our science analyst. Appropriately enough, she'll be joining me, she is joining me through the miracles of modern science, Skype. But anyhow, today's topic is a broad one: the geopolitics of water scarcity. We're using this as kind of an opportunity to explore a new innovation in the way we share informational reports with our readers. This will what we're calling an ongoing series so Rebecca will be exploring region by region country by country over the coming weeks and months, but before we get into anything very specific maybe you could just give me kind of a primer, Rebecca, on the geopolitics of water scarcity.

**Rebecca Keller:** So the geopolitics of water come down to the very definition of the term the geo in geopolitics. It's about geography and the constraints. So just like any other natural resource whether it be oil or even you know mountains that provide security, water is one of the advantages or disadvantages a country must operate in the constraint based analysis when looking at their political motivations, be them economic, political, social, or security wise. But unlike other commodities, water is not necessarily at the forefront of peoples' minds all the time like oil or natural gas would be, but it still comes back to the constraint. So when you look at water scarcity, or actually more appropriately water stress, you're looking at a couple of different dynamics. You're looking at short-term stressors like drought, which tend to be in the news more often, but then we'll also be looking at water stress over the long-term, which is a bigger problem with overuse and growing populations and changing economics and how that over use or limited availability of water plays into the constraints each individual country might face.

**David:** But I want to come back to a point that you made yesterday when we were chatting about this, that there's a uniqueness to this geopolitical issue that we don't find in other resource issues in that water scarcity, unlike as its often portrayed in the media doesn't lead to "water wars," it's an underlying issue that amplifies other kinds of social and political stresses in a political society.

**Rebecca:** Absolutely. Water wars is a popular phrase you'll see in the media quite a bit and that's something we tend to, not shy away from, but don't believe to be the true focus. Its an underlying

constraint that faces not just arid nations like those in the Middle East, but every nation has a limited, be it a large limit or a small limit, amount of water. And how the nation uses that resource or over uses that resource will play into how big that is of a constraint to their economic, political and social development in the coming years and decades. Versus physically fighting over water, it's acting as a constraint to future growth.

**David:** I know that when you get into the hard pan of the analysis that we'll be rolling out you'll be exploring these issues region by region, but I'm kind of interested in hearing your early thoughts on how this plays out in different ways and in different parts of the globe. California, where you're located, certainly is going through a lot of water-based trauma at this point, and then we move on to very very different problems in places as diverse as India and Yemen and South Africa, to mention a few examples.

**Rebecca:** Absolutely, water stress is a global issue. Everyone, every country will experience some level water stress in the coming years, but its also a very regional issue in that each nation will be forced to deal with water stress in different ways. So more developed nations, the United States, California for example, have the capability to implement water management strategies and alternative water solutions, be it desalination or waste water management. Now those are still difficult things to implement even in developed countries, but the capability is there, whereas if you look at Yemen, which is an unstable country as far as political and social stability is concerned, there's not necessarily the government in place to implement the necessary measures to do what we would say would be — do more with less water — so be able to survive with less available water. So yes a country like Yemen is under more of a threat of almost physically running out of water in certain locations because they don't have the capability to manage the water they do have available. Whereas California, which is under an extremely severe drought right now, has more options on the table to do more with less in the coming years.

**David:** But I'm also intrigued in reading through your drafts of the sheer complexity that in a rural society for example when there is a water scarcity issue in rural areas the result is constraints on agriculture, which leads farmers to leave the land and move to the cities. Then the increasing urbanization creates a whole new set of water scarcity issues in the urban environment.

**Rebecca:** So agriculture is globally the largest consumer of water so any kind of water stress or water scarcity is going to have an impact on agriculture so in a place like India for instance where we see significant pollution affecting available water sources there and ground water over use causing the ground water levels to get lower and lower so wells have to be drilled deeper and deeper, making them more expensive we then see the movement of people into the cities or urbanization as you mentioned. And this urbanization, you still have to feed those people but they are no longer growing their own crops so its either, you know, import food or continue to produce the same amount of agriculture, which then puts more strain on those water resources. In addition you have increased municipal demand and the infrastructure may not be adequate in that it might not be able to carry the amount of volume for these increased populations in urban areas. Or it may be old or poorly maintained, in which case you're losing more water than you're getting, at times.

**David:** The implications are many. I'm really looking forward with you as we fold this project out. I know our readers will appreciate the effort as well. So please join us here at Stratfor to read more about the geopolitics of water.

"Series Preview: The Geopolitics of Water Scarcity", 29/11/2014, online at: <http://www.theepochtimes.com/n3/1112231-series-preview-the-geopolitics-of-water-scarcity/>

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### ❖ Middle East Wasting Treated Sewage Effluent

The Middle East wastes treated sewage effluent by discharging it into the ocean even though it could be reused, a new report says.

Between 40 and 60 percent of the Middle East's wastewater "is discharged into the sea when the treated sewage effluent could be stored in aquifers and reused for more water-efficient purposes," *Bloomberg Businessweek* reported, citing a new paper from Dutch engineering and consulting firm Arcadis NV.

Instead of focusing on conservation, the Middle East needs to stop wasting treated sewage effluent, the Arcadis' 2014 Middle East Aquifer Recharge report said.

"There should be an even greater drive not to let treated sewage effluent, TSE, go to waste," it said, per *Bloomberg*.

Policymakers will have to significantly change their approach to reused water in order to begin salvaging wasted treated sewage effluent.

"TSE can and should be recycled but this requires a change in thinking from being a choice and cost to a necessity and investment," the Arcadis report said, per *Bloomberg*.

"The solution is either direct or indirect reuse of TSE, with indirect preferred and acceptable as there is an environmental buffer that also acts as storage whereas direct use cannot store water without building huge reservoirs if there is no immediate need," the Arcadis report said, per *Bloomberg*.

Titia De Mes, a water industry expert at ARCADIS, explained how policy changes could make water use in the Middle East more efficient.

"The region should use treated sewage effluent as the precious resource it is and stop thinking of it as waste or a useless by-product," De Mes said, per an Arcadis release. "TSE can and should be recycled."



The report highlighted three options for improved aquifer policies: aquifer storage and recovery; aquifer storage transfer and recovery and aquifer recharge and recovery.

"The different techniques involve water that is re-injected back into the aquifer for later recovery whether it is used by a single well, stored for a prolonged period and pumped through another well, enabling natural treatment or built with infrastructure or an existing landscape, such as a wadi, to enhance groundwater infiltration, also enabling natural treatment," the release said.

The approach of individual countries in the Middle East varies significantly.

"The report highlights the key discrepancy of TSE planning and implementation across the GCC countries. Abu Dhabi and Doha are currently pumping excess desalinated water in the aquifer to act as emergency storage whereas other key cities are still in the middle of research for the use of TSE," the release noted.

The Middle East faces sizable water challenges.

"Water resources are becoming increasingly scarce, especially for the millions there who already lack access to sanitary water. Some of these countries, including Yemen, the United Arab Emirates, Saudi Arabia, and Iraq, are facing unique problems that require global, immediate attention. Beside their neighboring location, one shared factor of all these countries is their lack of water resources and poor water management," The Water Project, a non-profit sustainability project, reported.

"Middle East Wasting Treated Sewage Effluent", 01/12/2014, online at: <http://www.wateronline.com/doc/middle-east-wasting-treated-sewage-effluent-0001>

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### ❖ Sudan Continues Relinquishing a Growing Portion of Nile Water Share!!

News agencies reported that the Sudanese National Assembly (Parliament) protested in a session on Wednesday 19 November 2014 what the deputies termed “the Sudan’s weak position” towards Egypt with regards to the Nile Water Agreement and they stressed the need for preserving its rights in the coming period

Water Resources and Electricity Minister Mutaz Mussa vowed at that parliamentary session that the Sudan would not relinquish its historic rights and would not give up a single cubic meter of its share. There is no nation that can prevent the Sudan from utilizing its full and complete share of the Nile water, he added.

The Minister described, in his statement to the Parliament on a national plan for development and utilization of the water resources, the 1959 Nile Water Agreement as “unfair”. Yet he underlined that his government would remain committed to the agreement and not to trespass the right of anyone. He predicted that utilization by the Sudan of its share of the Nile water would fend off the regional and international risks which might confront the Sudan in the future with regard to the water issue. Mussa declared that the Sudan intends to demand division of the increase in the annual average water revenue of 91 billion cubic meters as indicated in the Agreement. However, he admitted that this demand might be opposed by the other nations of the Nile Basin which consider the division of the water as a threat to their future utilization of the Nile water.

The national plan for development and utilization of the water resources, the Minister’s statement and the above-mentioned queries and remarks by the deputies evoke a number of questions which can be summed up as follows:

First: What is the Sudan’s share of the Nile water as stipulated in the Nile Water Agreement of 1959?

Second: How much is the quantity which the Sudan has managed to utilize?

Third: How much is the quantity which the Sudan has failed to utilize since the signing of the Nile Water Agreement on 8 November 1959 until this year?

In this article, we shall try to find answers to those questions

As we have indicated in several previous articles and in four TV interviews with Ustaz/ Al-Tahir Hassan al-Toam that the Sudan, throughout the period extending from signing the Agreement with Egypt in 1959 and until today, has failed to utilize 350 billion cubic meters of its share as indicated in the Nile Water Agreement. But in this article we are going to explain that the Sudan has in fact failed to utilize much more than this quantity and, as we have previously promised, we are now to explain the new figure in this article.

The quantity utilized by the Sudan out of its share has remained encompassed by ambiguity and official silence for long years. Egypt and the Sudan have agreed in the Nile Water Agreement they signed on 8 November 1959 that the quantity, as measured at Aswan Dam, is 84 billion cubic meters in the average as based on the average flow of the Nile since 1900. Egypt and Sudan kept all of this quantity for themselves after deducting the loss by evaporation and seepage at the High Dam Lake which was estimated at 10 billion cubic meters. The Sudan agreed that it would bear this loss equally with Egypt, although it would bear by itself alone the loss that would be caused by the evaporation at the dams it would build which is estimated at more than six billion cubic meters, including the estimated an annual 2.5 billion cubic meters at Jebel Awlia Dam.

Egypt managed to convince the Sudanese delegation during the Nile water negotiations in 1959 that the High Dam would be for the interest of both countries and, accordingly, the Sudan agreed to bear half of the quantity of evaporation at the High Dam Lake. It appears odd that there are former irrigation ministers and technicians who are still convinced of this argument.

The two nations agreed to divide between themselves the remaining Nile water which is 74 billion cubic meters (after deduction of the evaporation loss at the High Dam Lake) provided that 55.5 billion cubic meters would go to Egypt and 18.5 billion cubic meters to Sudan. Under that Agreement, the Sudan agreed to grant Egypt a 1.5 billion cubic meter loan to expire in 1977, raising Egypt's share to 57 billion cubic meters and decreasing the Sudan's share down to 17 billion cubic meters.

Among the numerous oddities of the 1959 Nile Water Agreement was that it did not indicate the date and the manner in which the water loan would be given back to the Sudan. Reference to the loan was made in the appendix, rather than the body of the agreement.

However, there was a strong belief by the international circles engaged in water studies that the Sudan has failed since the first years of the Agreement in utilizing its share of the Nile water. The dams of Sennar, Al-Rosaries and Khashm Al-Girbah have over the years lost half of their storage capacity due to accumulation of the silt carried by the Blue Nile and River Atbara from the Ethiopian Plateau which together are estimated to bring in more than 120 tons of silt each year, the larger portion of which accumulates in the lakes of those dams. This was a clear indication of the failure by Sudan to utilize its full share of the Nile water. The silt was also behind the decline of the Gezira Scheme, blocking the irrigation canals and, thus, the farms could not get sufficient water. The Gezira Scheme was the biggest consumer of the Nile water, using about eight billion cubic meters which was equal to half of the Sudan share after deducting the water loan given to Egypt.

The belief in failure by the Sudan to utilize its share was strengthened by two factors: silence by the Sudanese officials about continuity or expiry of the water loan to Egypt by 1977 and absolute avoidance of speaking about restoration of this loan and also the uttermost silence about the actual

figure of the quantity of the Nile water the Sudan consumes each year.

These two factors are closely linked together as there is no sense that the Sudan demands the annual 1.5 billion cubic meter loan while it has failed to utilize the greater portion of its original 18.5 billion cubic meter share. This is something we are going to discuss below.

Debate over the quantity of the water the Sudan utilizes from its share continued heatedly for some time as a result of the formal silence on the matter. A number of senior officials and consultants of the Ministry of Irrigation and Water Resources insist that the Sudan consumes its full 18.5 billion cubic meter share of the Nile water. Some of them declared this allegation in a number of public meetings.

In the meantime, reports by international organizations and United Nations agencies concerned with water indicate that the annual Sudan's usage of the water falls within the limit of 14 billion cubic meters. This figure, which appeared on the websites of those institutions, was quoted by some scientific books and articles and was accepted by a number of water specialists, like Professor Robert Collins, the Nile water expert, as was widely circulated.

For his part, former Irrigation and Water Resources Minister Kamal Ali Mohamed (1999-2011) contradicted this figure by declaring in statements to a number of Sudanese satellite TV channels on 9 August 2011 that the Sudan's annual consumption is not more than 12 billion cubic meters a year. The Sudanese Al-Sahafa daily newspaper published those statements under the headline: "The Sudan will not relinquish its share of the Nile water." The Minister's remarks included one in which he said: "The Sudan has an inclusive plan for full utilization of its share of the Nile water. We might have been late in utilization of our full share as the Sudan draws a total 12 billion cubic meters. We are

planning to establish a number of projects for utilization of the full share.” He stressed that the Sudan would not relinquish a single meter of its share. (See the statements by the former Irrigation Minister as published on page three of Al-Sahafa daily on 10 August 2011).

There was a striking resemblance between the statements by former Minister Mohamed on 9 August 2011 and those made by current Minister Mussa in the National Assembly on 19 November 2014.

The latter said: “The Sudan will not relinquish its historic rights in the Nile water and will not give up a single meter of its share,” adding: “There is no nation that can prevent the Sudan from utilizing its full and complete share.”

The remarks by the Sudan’s Number One water resources expert have put an end to the controversy over this issue and have removed the ambiguity surrounding it altogether. The news agencies transmitted those statements in a flash in several languages. The international academies and organizations were pleased with the statements which provided them with an official figure by the Sudanese government, a figure which could and must be relied on. Of course those institutions adjusted their figure to indicate that the Sudan consumes only 12 billion cubic meters a year of its 18.5 billion share of the Nile water. The remarks also put an end to speculations about the issue.

The statement by the Minister that the Sudan usage of its Nile water share of 18.5 billion cubic meters does not exceed 12 billion means, in a simple counting process, that the Sudan has failed to utilize 6.5 billion each year and until today, that is, over a period of 55 years. And multiplying these two figures, it will turn out that the Sudan has failed to utilize 357 billion cubic meters. One former minister said the Sudan did not lose this quantity because it is stored in the High Dam Lake, which is an astonishing argument. The High Dm Lake was capacity filled in 1970 when the storage reached



162 billion cubic meter and no more water could be stored in it, even for Egypt, and, moreover, there was no agreement with Egypt for storing a single cubic meter for the Sudan, let alone 350 billion cubic meters.

The argument that the Sudan has failed to use 350 billion cubic meters from its share was based on the assumption that the total Nile water flow as measured at Aswan is 84 billion cubic meters a year as indicated in the Nile Water Agreement of 1959. This figure was the average of the River Nile revenue during the period extending from 1900 until 1958 which was included in the Agreement. But what was the agreement between the two parties in case the water revenue exceeded 84 billion cubic meters a year? The 1959 agreement stipulated that if the average exceeded 84 billion cubic meters a year, the increase would be divided equally by the two countries (see Paragraph two of the 1959 Nile Water Agreement). In fact, the River Nile revenue has remained increasing continuously since 1960, something which made Egypt fill the High Dam Lake with 160 billion cubic meters in a short period of time of not more than 10 years, without affecting the irrigation projects and programmes in Egypt.

The Nile water revenue reached 117 billion cubic meters in 1961, then 124 billion in 1964 and 104 billion in 1967. The flow over those years was about 90 billion cubic meters and in 1975 it reached 123 billion cubic meters, then 115 billion in 1988. The highest revenue was in 1998 when it recorded 126 billion, then in 2008 it was 110 billion cubic meters.

The UN agencies and other organizations concerned with the water resources have, accordingly, adjusted their figures on the River Nile revenue. The UNDP reports indicate that the average of the River Nile flow is 109 billion, rather than 84 billion cubic meters. It is to be mentioned that Minister Mu'taz Mussa pointed out in the Parliament on 19 November 2014 that the average River Nile

revenue is 91 billion cubic meters, thus making the average 84 billion cubic meters an outdated figure.

Let us assume that the figures given by the Minister were accurate and, accordingly, the average revenue has been 91 billion cubic meters since 1960, which means there was an annual seven billion cubic meters increase over the 84 billion figure indicated in the Agreement which stipulates that this increase would be divided equally between the two countries. The Sudan has not utilized a single cubic meter of its 3.5 billion share of this increase since 1960.

Adding this new figure to the 6.5 billion which the Sudan has failed to utilize from its original share of 18.5 billion, it would turn out that the Sudan has failed to use 10 billion cubic meters each year since 1960, that is, 540 billion cubic meters over the past 54 years, according to the figures given by the Minister himself.

If we count on UNDP figures that the average of the River Nile water flow in 1960 was 109 billion cubic meters, the increase will be 25 billion a year of which the Sudan, according to the 1959 Agreement, deserves 12.5 billion cubic meters a year. If this figure is added to the original 6.5 billion, the Sudan failure of utilization of its rights will be 19 billion each year since 1960 until today, totaling 1,026 billion cubic meters during the past 54 years.

It seems that the difference between the Minister's figure (91 billion) and that of the UNDP (109 billion) was because the Minister counted on the average Nile water revenue between 1900 and 2012 (or 2014), while the UNDP used the average revenue between 1960 and 2012. The UNDP was correct because the average should have been counted after signing the Agreement in 1959, that is,

since 1960 until 2012, because the average before 1960 became outdated.

We believe that the Sudan has Forsaken a great deal of its share of the Nile water, no matter which figure- the Minister's figure (91 billion) or that of UNDP (109 billion)- is correct, or whether the average was over the past 50 years, 20 years or the last 10 years. This has occurred despite statements by successive Irrigation ministers, both technocrats and politicians, stated that the Sudan would not forsake a single meter of its share of the Nile water.

This situation will continue, if it does not worsen, whether we agree or disagree, because the infrastructure of our main schemes (the Gezira, Al-Rahad, Al-Suki and Halfa Al-Jadidah) increasingly deteriorates and declines in front of our eyes each day. The President of the Board of Directors of the Gezira Scheme, Dr. Karrar Abbady, tendered his resignation after he had realized that his mission of restoring the Scheme to its good old days was impossible to achieve.

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The inhabitants of Wadi Halfa have made tremendous sacrifices of experiencing coercive relocation of more than 50,000 people and submersion of 27 villages in addition to the city of Wadi Halfa. Their sacrifices included the loss of 200,000 feddans (hectares) of fertile lands and others that could have been reclaimed, more than a million fruitful date and citrus trees, their houses, the graves of their beloved relatives and tombs of their late religious leaders and a large part of their history and heritage. Moreover, the Sudanese people bore about two-thirds of the cost of relocation.

All those sacrifices were made in exchange for an annual 18.5 billion cubic meters for irrigation of the Gezira Scheme and Managil Extension.

What can be said to the people of that region after the Sudan has utterly failed to utilize the larger

portion of its share of the Nile Water and after the collapse of the Gezira Scheme. These are the two reasons for which those people have sacrificed.

“Sudan Continues Relinquishing a Growing Portion of Nile Water Share!!”,04/12/2014, online at:  
<http://news.sudanvisiondaily.com/details.html?rsnpid=243429>

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❖ **New approach to food aid: DuPont, U.S. help African farmers**

GUNCHIRE, Ethiopia – President Barack Obama is counting on an unusual mix of taxpayer dollars and investments from profit-hunting agribusiness giants such as DuPont to feed the globe's growing population.

For the plan to work, small-scale Ethiopian farmers like Tekalugna Abebe will need to greatly increase their paltry yields of corn and other crops. That will be no small achievement in a country where farmers typically plow by hand or with oxen and still plant their crops by tossing the seed willy-nilly out on the ground instead of placing it in rows.

Abebe, 38, a participant in DuPont's program, harvested about 4 tons of corn from just over an acre of land last year, four times what he produced the year before.

The extra corn will help him pay for schooling for his four children, the oldest of whom is 8. "I am confident that my children will have a bright future," he said through an interpreter.

His village of Gunchire has a long history of food shortages, and it is one of the places that DuPont's Iowa-based seed business, DuPont Pioneer, and the U.S. Agency for International Development are testing a new approach to improve the production of corn among the millions of poor, small-scale farmers who dominate African agriculture.

The plan, part of the Obama administration's Feed the Future initiative, is to give farmers bags of nonbiotech hybrid seed and train them on how to properly plant the seeds and apply chemical fertilizers. Only 1 in 10 Ethiopian farmers who grows corn typically uses improved seeds.

Under Feed the Future, the administration is spending more than \$1 billion a year to increase food production in 19 target countries. And in a novel approach to international agricultural assistance, the taxpayer funding now is being supplemented in some countries by commitments from corporations such as DuPont, Cargill and beverage giant Diageo.

The administration launched Feed the Future in the wake of the 2008 food price spikes that sparked civil unrest in some countries and brought global criticism to U.S. biofuel policies that were seen as contributing to the soaring prices.

"Feed the Future demonstrates a new model of development, one working alongside partner governments, the private sector, civil society and innovators to help the world's most vulnerable communities progress from dependency to self-sufficiency," said USAID Administrator Rajiv Shah. "This is a true expression of American values."

The initiative also is providing a modest counterweight to the billions of dollars that China is investing in Africa through the financing and construction of major infrastructure projects, including a critical freight rail line in Ethiopia, upgrades to rural roads, a hydroelectric dam on the Nile River and a mass transit project in Addis Ababa.

Critics say the administration had no business enlisting the private sector. "Corporations are accountable to their shareholders, obliged to make a profit. They are not charities. They are bound by law, but not by the public interest," wrote Sophia Murphy of the Institute for Agriculture and Trade Policy.

Under the program, farmers are given seeds the first year. After that, they have to buy them.

Early results from DuPont's project in Ethiopia have shown some promise. Some of the 20 farmers say they harvested as much as four times more corn in 2013 from the same amount of land as they did the year before. They were among 320 farmers in 16 districts around central Ethiopia who received training in 2013.

More than 3,000 farmers were added this year, and that is scheduled to jump to more than 30,000 in 2015.

Farmers only recently started harvesting this year's crop, but DuPont officials say the yields should be improved again this year and that the project remains on track.

Abebe doubled his acreage this year and trained 20 to 30 farmers in the methods he learned, including the use of hybrid seed.



An older female farmer near Gunchire, Gifty Jemal, said she learned from the project to plant the hybrid seed in rows. She also used twice as much fertilizer as she did before, and made it more effective by applying it near the seeds. The extra corn meant that she had more than she needed and could sell some in the local market.

A 2010 study by the International Food Policy Research Institute estimated that Ethiopian farmers could increase corn production by more than 60 percent just by adopting commercial seeds and improving their practices on one-quarter of the nation's cropland.

But the study found in part that government control of the public-sector seed price was making it very difficult for private-sector companies like DuPont to compete.

Tekalign Mamo, a top adviser in the Ethiopian agriculture ministry, likes the competition that DuPont can provide to the local seed sector. Even though the Pioneer seed can cost three times as much as locally produced varieties, farmers will buy it because of the results, he said. He said the commercial competition creates a "check-and-balance system. This will make the locals work hard."

DuPont is expanding the project to Ghana and Zambia, two other Feed the Future countries. To support the Ethiopia project, DuPont this spring opened a warehouse with state-of-the-art equipment for cleaning and conditioning seed at a far higher speed than it could before. Properly processed seed will be more uniform in size and germination, increasing yields.

The company used the facility to process 9,000 tons of seed in 2014, more than 20 times what it sold in the country the year before.

Paul Schickler, president of Johnston-based DuPont Pioneer, insists the Ethiopian project is neither a public relations stunt nor an attempt to exploit African farmers and coax them into adopting American-style farming practices.

"Our goal is to improve farmer livelihoods, and that's in Iowa, and in China, and in Ethiopia," Schickler said.

He said improving food production in Ethiopia has to be done "farm by farm, providing them the inputs that they need, the financing that they need, but then equally important is the knowledge."

DuPont's Ethiopia business, which dates back to the end of the country's communist rule more than two decades ago, is only a blip in DuPont's agriculture division, which had \$12 billion in sales in 2013. DuPont expects \$500 million in total African sales in the next few years and \$1 billion over the next decade, according to a plan outlining the multinational corporation's commitments in Ethiopia.

Whether Feed the Future has a long-lasting effect remains to be seen. The initiative is designed to promote a series of demonstration projects — DuPont's is one — that can be shown to increase food production and reduce hunger. But it will then be up to the countries themselves to see that successful ideas are carried out.

Ethiopia has so far been slow to act on 15 promised policy and legal changes the government made to entice the investment from DuPont, Diageo, DuPont rival Syngenta and other multinational companies. All of the changes were to have been made by April 2014; as of this summer only one had been completed.

The government implemented a new policy for regulating seeds, a critical move for DuPont. But it has so far failed, for example, to lift an export ban on grains, which would encourage private investment in farming.

Ethiopia also is hamstrung at least temporarily by the steep cost of the Chinese-driven infrastructure program. The Ethiopian government required banks to buy bonds worth 27 percent of their annual loans, a move that has made private financing harder to get for agriculture and other sectors.

Still, Jonathan Shrier, the State Department's top diplomat for food-security issues, says that relying on host governments makes it more likely Feed the Future will ultimately deliver long-lasting results.

"The old style of development was criticized in the past for creating a perpetual dependency on assistance. That's not the idea here," he said.

Philip Brasher, a former Des Moines Register reporter, is senior editor for Agri-Pulse Communications. The Pulitzer Center on Crisis Reporting provided support for this project.

Signs of progress: Shoes, roofs and seeds

Melaku Admasu, the Ethiopian operations manager for the DuPont Pioneer seed business, has a mental checklist for economic improvement as he travels through the country's rural areas.

One sign, he tells a visiting reporter, is when people wear shoes as they walk along the road, rather than go barefoot. Other signs: roofs made of corrugated metal, instead of thatch; and a homestead with two huts, rather than one. The second hut means the livestock are being kept separate from the humans.

Admasu hopes his work with DuPont and the U.S. Agency for International Development's Feed the Future initiative will result in more of the latter — while also growing the company's business, which has long struggled to compete against the government-protected public seed sector.

"If we increase their productivity ... they will increase their income," said Admasu, who has been working for DuPont since 1993. "If they improve their income, we can change their lifestyle."

But he says it will take time and education to get farmers to think differently about how they farm and to take better care of their land.

"This is not something you can change overnight. You need to change the mindset of the people. You need to help them think for the future. What are you going to leave behind for your children?"

"New approach to food aid: DuPont, U.S. help African farmers", 07/12/2014, online at: <http://www.desmoinesregister.com/story/money/business/2014/12/07/dupont-helps-african-farmers/19965821/>

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## ❖ **AFED Conference on Arab Food Security Recommendations for Transition to New Production and Consumption Patterns – Environment and Development**

The Arab Forum for Environment and Development (AFED) concluded its seventh annual conference on Arab food security. Held in Amman under the patronage of his majesty King Abdullah II ibn Al Hussein, the conference brought together 750 delegates from 54 countries, representing 170 institutions from the private and public sectors, international and regional organizations, agricultural investment bodies, research centers, universities, civil society and media.

AFED secretary general Najib Saab cited draft recommendations which endorsed AFED report on Food Security, advocating that Arab countries can significantly close the alarming food gap that reaches 50 percent, through efficient management of the agriculture and water sectors, combined with regional cooperation based on comparative advantage in agricultural resources and investable capital.

The conference called for implementing available options to enhance the self-sufficiency aspect of food security, including boosting crop and water productivity and reducing post-harvest and other losses. It urged for more investments in agricultural scientific research and sustainable development of the livestock and fisheries sectors, with a view to increase production to meet local demand and promote the potential for exports. Enabling women to play their role in development, and especially in agriculture, was considered of high importance.

Emphasized also was the need to implement an awareness campaign to change consumption patterns, especially through more dependence on commodities with similar nutritional value but less water requirements. The conference also called for adaptation strategies to cope with climate change, adopting improved agricultural and water management practices, conservation agriculture and selection of crops best suited to predicted climate conditions.

The conference called for supporting the Palestinian people's right in its land and water to invest in its food security. It also emphasized the importance of political stability and security to enable investment in agriculture, adoption of reform policies and promoting the contribution of the private sector in boosting food security.

## Second day sessions

A session was held about food value chains, shortages and implications of price volatility. Another session discussed food security options in GCC countries.

Arab initiatives to enhance food security were presented, namely the water and agriculture strategy in Abu Dhabi, FAO regional initiative on resilience for food security and nutrition, IFRI initiative, ICARDA project to enhance food security in Arab countries, and improving marginal land productivity in Badia of Jordan.

ESCWA introduced its draft report on pathways towards food security in the Arab region. Civil society initiatives in food security were presented by APNature in Palestine, AFDC in Lebanon, KEPS in Kuwait and HIMA in Jordan. The Future Environment Leaders Forum (FELF) supported by AFED gathered students from 14 Arab universities to discuss the right of Arab future generations to food security.

The conference closed with a debate over recommendations.

“AFED Conference on Arab Food Security Recommendations for Transition to New Production and Consumption Patterns”, Environment and Development, 04/12/2014, online at:

<http://mideastenvironment.apps01.yorku.ca/2014/12/afed-conference-on-arab-food-security-recommendations-for-transition-to-new-production-and-consumption-patterns-environment-and-development/>

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### ❖ **Food Security in Arab Countries: Challenges and Prospects – AFED report**

Food Security is the seventh in the series of annual reports on the state of Arab environment, produced by the Arab Forum for Environment and Development (AFED). The report highlights the need for more efficient management of the agriculture and water sectors, in view of enhancing the prospects of food security.

This report comes after Arab Environment – Future Challenges (2008), Impact of Climate Change on Arab Countries (2009), Water – Sustainable Management of a Scarce Resource (2010), Green Economy in a Changing Arab World (2011), Survival Options- Ecological Footprint in Arab Countries (2012), and Sustainable Energy (2013).

Food security is of great concern to Arab countries. They have been pursuing a target of higher food self-sufficiency rate, but achieving this goal remained beyond reach. While they have limited cultivable land and scarce water resources, they did not use their agricultural endowments in an effective and efficient manner. Lack of appropriate agricultural policies and practices led to diminishing the bio-capacity of the resources to regenerate their services and threatened agricultural sustainability.

The advent of the food crisis in recent years and the unprecedented spike in food prices, coupled with export restrictions imposed by some food producing countries, reignited the call for ensuring reliable food sources for food import dependent countries like the Arab countries. The question is to what extent can the available agricultural resources at country and regional levels meet demand for food in the Arab world? What are the prospects for food self-sufficiency, taking into consideration the growing population and the impact of climate change on land and water resources? And what other options do the Arab countries have to ensure food security?

The result of collaborative work, this AFED report has been produced by a group of leading experts, in cooperation with regional and international organizations, universities and research centers. Over 200 researchers and specialists contributed to the work. Various consultation meetings were held to discuss the drafts, culminating in a regional meeting hosted by the Kuwait Fund for Arab Economic Development (KFAED), where 40 experts from 14 countries and 21 institutions reviewed the drafts with the authors.



A novel feature of the report are the maps showing water and land resources in the Arab region, produced in cooperation with the International Center for Agricultural Research in Dry Areas (ICARDA) based on the most recent data. Beyond identifying the availability of resources per country, they point out obvious routes of regional cooperation, based on the variation in natural endowment.

AFED hopes that its report on Food Security will help Arab countries adopt the right policies and commit to long-term investments, allowing them to secure a sustainable supply of food to meet ever-growing needs.

Report can be downloaded here

<http://www.afedonline.org/en/inner.aspx?contentID=1076>

“Food Security in Arab Countries: Challenges and Prospects – AFED report”, 04/12/2014, online at: <http://mideastenvironment.apps01.yorku.ca/2014/12/food-security-in-arab-countries-challenges-and-prospects-afed-report/>

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### ❖ Thailand plans to spend \$4 billion on urgent water projects

BANGKOK - Thailand's military government plans to spend about 100 billion baht (\$3.97 billion) on urgent water management projects in the fiscal year started Oct. 1, the prime minister said on Tuesday.

The projects are part of a new water management plan and will be financed by the annual budget and other sources, said General Prayuth Chan-ocha, who led a bloodless coup in May to end months of political unrest. "Next year, we will look at the whole system but we haven't talked about overall funding yet," Prayuth told reporters.

For now, the government plans to use about 50 billion baht from the annual budget and will ask the finance ministry to seek the rest, he said.

A 350 billion baht scheme initiated by the previous administration and aimed at preventing a repeat of flooding in 2011 was halted by a court and later scrapped by the junta.

A government source told Reuters that a new 10-year water management plan beginning in 2016 and worth 952 billion baht will be proposed to Commerce Minister General Chatchai Sarikulya this week for consideration before being passed to the cabinet.

"Thailand plans to spend \$4 billion on urgent water projects", 02/12/2014, online at:

[http://business.asiaone.com/news/thailand-plans-spend-4-billion-urgent-water-projects?utm\\_source=Circle+of+Blue+WaterNews+%26+Alerts&utm\\_campaign=799b1b1a68-RSS\\_EMAIL\\_CAMPAIGN&utm\\_medium=email&utm\\_term=0\\_c1265b6ed7-799b1b1a68-250657169](http://business.asiaone.com/news/thailand-plans-spend-4-billion-urgent-water-projects?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=799b1b1a68-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-799b1b1a68-250657169)

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### ❖ Delta faces water shortage, salination

The Cuu Long (Mekong) Delta faces a possible shortage of freshwater for next year's rice crops due to drought and a worsening of saltwater intrusion in the coming dry season, according to the Southern Centre for Hydro-Meteorological Forecasting.

Its prediction is based on higher temperatures this year accompanied by below-average rainfall and declining water levels in major rivers.

The rainfall between December and April 2015 would be much below average while the temperature would be 0.5-1 degree Celsius higher than normal, the centre also forecast.

Speaking at a recent seminar in Dong Thap Province, Tran Dinh Phong, deputy head of the centre's Hydro-Meteorological Forecasting Management Division, said floods in the delta were low this year and the water levels in major rivers were significantly reduced compared to previous years.

Seawater is likely to encroach 40-50km inland from rivermouths, or twice this year's levels, he warned further.

Doan Tan Trieu, deputy director of the Tra Vinh Province Department of Agriculture and Rural Development, said, "This year, the province's observation stations have recorded saltwater intrusion since mid-November."

Luong Quang Xo, deputy head of the Southern Irrigation Planning Institute, said delta provinces, especially those along the coast like Bac Lieu, Soc Trang, Ca Mau, Ben Tre, and Tien Giang, should dredge their canals and store freshwater for the winter-spring and summer-autumn rice crops.

"Delta faces water shortage, salination", 02/12/2014, online at: [http://www.eco-business.com/news/delta-faces-water-shortage-salination/?utm\\_source=Circle+of+Blue+WaterNews+%26+Alerts&utm\\_campaign=5e36120bd5-RSS\\_EMAIL\\_CAMPAIGN&utm\\_medium=email&utm\\_term=0\\_c1265b6ed7-5e36120bd5-250657169](http://www.eco-business.com/news/delta-faces-water-shortage-salination/?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=5e36120bd5-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-5e36120bd5-250657169)

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## ❖ India to Spend \$331 Million Mapping Groundwater Depletion

**India** plans to spend 20.5 billion rupees (\$331 million) mapping its aquifers by March 2017 as groundwater depletion in the world's second-most populated nation continues at unsustainably high rates.

At least 85 percent of India's villages and half of its cities rely on wells for water. Farming accounts for about 90 percent of the water withdrawals in India as irrigated acreage has almost tripled since 1950.

The country is collecting aquifer data at six sites across five states, junior water minister **Sanwarlal Jat** said today. The average available water each year amounts to 1,869 billion cubic meters, he said. Of this, only 690 billion cubic meters of surface water and 433 billion cubic meters of replenishable groundwater can actually be used, the minister said, responding to questions in the lower house of Parliament.

India has lost groundwater equal to more than twice the capacity of **Lake Mead**, the biggest U.S. reservoir, as overuse from 2002-2008 and lack of replenishment cut supplies, a U.S. National Aeronautical and Space Agency study showed.

About a fifth of water used globally comes from under the ground, according to the **Stockholm International Water Institute**. Withdrawals are predicted to increase 50 percent by 2025 in **developing countries** and 18 percent in developed countries as populations grow and to cope with industrial and agricultural demand, according to the policy group.

Estimates by India's Central Groundwater Board showed the country has 1,071 "over-exploited areas" with 217 and 697 more areas deemed critical and semi-critical respectively, Water Minister Uma Bharti told the lower house.

"India to Spend \$331 Million Mapping Groundwater Depletion", 04/12/2014, online at:  
[http://www.bloomberg.com/news/2014-12-04/india-to-spend-331-million-mapping-groundwater-depletion.html?utm\\_source=Circle+of+Blue+WaterNews+%26+Alerts&utm\\_campaign=9f9590e866-RSS\\_EMAIL\\_CAMPAIGN&utm\\_medium=email&utm\\_term=0\\_c1265b6ed7-9f9590e866-250657169](http://www.bloomberg.com/news/2014-12-04/india-to-spend-331-million-mapping-groundwater-depletion.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=9f9590e866-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-9f9590e866-250657169)

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## ❖ Deforestation May Be at Root of Brazil Drought

Vera Lucia de Oliveira looks to the sky, hoping for any sign of rain.

For weeks, the taps in her home have run dry as Sao Paulo has suffered its worst drought in eight decades, with rainfall at one-third the normal level. Without heavy and prolonged rain, the megacity of 23 million could soon run out of water, experts warn.

"We are always thinking: The rain is coming, the rain is coming," said Oliveira.

But it doesn't, and a growing consensus of scientists believes the answer to what is happening to Oliveria and her neighbors lies not in the sky above their heads but in decades of deforestation of Amazon rainforest hundreds of miles away.

The cutting of trees, scientists say, is hindering the immense jungle's ability to absorb carbon from the air ? and to pull enough water through tree roots to supply gigantic "sky rivers" that move more moisture than the Amazon river itself. More than two-thirds of the rain in southeastern **Brazil**, home to 40 percent of its population, comes from these sky rivers, studies estimate. When they dry up, drought follows, scientists believe.

It's not just Brazil but South America as a whole for which these rivers in the sky play a pivotal meteorological role, according to a recent study by a top Brazilian climate scientist, Antonio Nobre of the government's Center for Earth System Science.

The study draws together data from multiple researchers to show that the Amazon may be closer to a tipping point than the government has acknowledged and that the changes could be a threat to climates around the globe. His work is causing a stir in drought-stricken Brazil as environmental negotiators meet in neighboring **Peru** at the Dec. 1-12 U.N. climate talks.

Destruction of the Amazon went unchecked until 2008, when the government put teeth in its environmental laws and sent armed agents into the jungle to slow the pace of deforestation by ranchers, soy farmers and timber speculators. The impact was quick: Destruction in 2012 was one-sixth of what was recorded eight years earlier, though it has ticked up in the last two years.

But Nobre and other scientists warn it's not enough just to slow the pace of destruction ? it must be halted.

"With each tree that falls you lose a little bit more of that water that's being transported to Sao Paulo and the rest of Brazil," said Philip Fearnside, a professor at the Brazilian government's National Institute for Research in the Amazon who was not part of Nobre's study. "If you just let that continue,

you're going to have a major impact on the big population centers in Brazil that are feeling the pinch now."

U.S. scientists praise the study, with U.S. Geological Survey drought expert James Verdin calling it "compelling and credible."

Earlier this year, researchers at the University of Minnesota highlighted two "once-in-a-century-level droughts" occurring in 2005 and 2010 in the region, in a peer-reviewed study in the Journal of Climate. They used climate simulations to find that deforestation "has the potential to increase the impact of droughts in the Amazon basin."

"Deforestation May Be at Root of Brazil Drought", 04/12/2014, online at:

[http://abcnews.go.com/Technology/wireStory/deforestation-root-brazil-drought-27355018?utm\\_source=Circle+of+Blue+WaterNews+%26+Alerts&utm\\_campaign=9f9590e866-RSS\\_EMAIL\\_CAMPAIGN&utm\\_medium=email&utm\\_term=0\\_c1265b6ed7-9f9590e866-250657169](http://abcnews.go.com/Technology/wireStory/deforestation-root-brazil-drought-27355018?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=9f9590e866-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-9f9590e866-250657169)

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