

ORSAM

ORSAM WATER BULLETIN

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Issue 72

ORSAM WATER BULLETIN

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✤ Iran launches \$1-billion project to bring water to desert

TEHRAN - Iran on Monday officially launched a \$1-billion first phase of an ambitious project to pump water from the Caspian Sea to a city in its vast and expanding central desert, state media reported.

The initial phase will see a desalination plant and pipes built over the next two years to supply water to the desert city of Semnan, population 200,000, according to officials.

"The desert is growing... therefore we need to control its growth," President Mahmoud Ahmadinejad said in a speech in the northern city of Sari, near the Caspian shore.

The first phase would see water for drinking, irrigation and industrial use taken from the Caspian, treated to rid it of salt, and pumped to Semnan, 150 kilometres (90 miles) away to the south.

The first desalination plant to be built would have a capacity of 200 million cubic metres per year, or 548 million litres a day, according to Energy Minister Majid Namjou.

Khatam al-Anbiya group, the industrial arm of Iran's powerful military Revolutionary Guards which has interests in key economic sectors, is handling work on the project.

Later, two other phases are planned that would pump more water into desert areas from the Caspian Sea and from the Gulf, the media said.

Iran has operated several other desalination plants for decades for other regions.

Such seawater treatment facilities are also in use in other wealthy and arid Middle East countries, including the United Arab Emirates, Saudi Arabia and Israel, to augment scarce water supplies.

"Iran launches \$1-billion project to bring water to desert", 16/04/2012, online at: <u>http://www.middle-east-online.com/english/?id=51749</u>

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Iran launches \$1.5 billion project to bring water from Caspian Sea to country's central desert

TEHRAN, Iran — Iran has launched a \$1.5 billion project to bring water for drinking and irrigation from the Caspian Sea to its central desert.

Monday's report on state TV did not say how long it would take to complete the project.

The TV says the water will be pumped from the Caspian Sea — the world's largest enclosed body of water. After desalination at the point of origin, it will be transported through a 500 kilometer (300 mile) -long pipeline to the central Kavir desert, bringing about 200 million cubic meters (7,062 cubic feet) of water per year.

Nearly 14 percent Iran's territory is desert and suffers from prolonged droughts.

The Caspian Sea is shared by Iran, Russia, Kazakhstan, Azerbaijan and Turkmenistan. Its salinity is about a third of that of sea water.

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"Iran launches \$1.5 billion project to bring water from Caspian Sea to country's central desert", 16/04/2012, online at: <u>http://www.washingtonpost.com/business/iran-launches-15-billion-project-to-bring-water-from-caspian-sea-to-countrys-central-</u> <u>desert/2012/04/16/gIQAMT12KT story.html?utm source=Circle+of+Blue+WaterNews+%26+Alerts&utm campaign=0</u>

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✤ Agriculture ministry plans to combat desertification

BAGHDAD, April 16 (AKnews) - The Ministry of Agriculture said today that it has developed a plan to combat desertification, confirming that it has allocated 10bn IQD (\$8.6m) for the implementation of four projects within its investment plan.

The general director of the Public Authority for Combating Desertification Mohammed Ghazi said 2bn IQD (\$1.7m) were allocated for the implementation of 31 desert oases and 2bn IQD for the Hammad regional basin shared by Jordan, Syria and Saudi Arabia, which aims to make use of rain water in the border desert.

Two billion IQD were allocated for the development of natural grass and the construction of two stations, one in Nafet Khana in Diyala province and another in Bahr al-Najaf area, while 4bn IQD (\$3.4m) were allocated to install sand dunes.

The ministry announced that the rate of desertification in Iraq is medium and it decreases from time to time due to the efforts of the ministry to reduce the spread of desertified land in the country.

The ministry agreed with Greece to activate the joint committee to develop the agricultural projects, especially with regard to the issue of desertification and drought through the introduction of modern techniques for agricultural irrigation.

"Agriculture ministry plans to combat desertification", 16/04/2012, online at: http://www.aknews.com/en/aknews/3/302076/

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***** Water ministry calls for including Tigris River within heritage sites

BAGHDAD, April 15 (AKnews) - The Ministry of Water Resources in Iraq today called on citizens to participate in a campaign to collect 30,000 signatures to include the Tigris River within the list of human heritage sites.

The general director of projects in the ministry Ali Hashim said the campaign aims to prevent the construction of dams and obstacles that reduce the rates of water entering Iraq.

"If the required signatures were collected, then Tigris River would be included within the heritage list in the UNESCO world organization, and would enter the list of world heritage reserves and would be protected from the building of the Turkish Ilisu dam."

A number of civil society organizations launched an initiative to collect 30,000 signature to be submitted to the United Nations Educational, Scientific and Cultural Organization (UNESCO) to include the Tigris River within the list of humanitarian heritage sites and move to end the work on the Ilisu Dam in Turkey.

Iraq accuses Turkey, Syria and Iran of being responsible for the lack of water levels in the Tigris River in Iraq because of the presence of agricultural and irrigation projects on it on other parts.

"The ministry will launch an awareness campaign for citizens in all the provinces to speed up the signing and save the Tigris River from the damage of the water policy of Turkey due to the construction of dams on it," added Hashim.

"Water ministry calls for including Tigris River within heritage sites", 15/04/2012, online at: http://www.aknews.com/en/aknews/3/301877/

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***** KRG will stop importing certain vegetables

ERBIL, April 15 (AKnews) – From today, Kurdistan Regional Government will cease importing five different types of vegetables.

The ministry has banned importing courgettes, onions and potatoes permanently, and beans and broad beans temporarily until October 31.

Senior marketing director Nouri al-Ismael from the Ministry of Agriculture and Water Resources said, the Ministry has banned importing some types of vegetables to Kurdistan Region indefinitely and some just for certain dates.

"The region's soil can provide enough vegetables meet the Kurdish demand," he said.

"KRG will stop importing certain vegetables", 15/04/2012, online at: http://www.aknews.com/en/aknews/2/301801/

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***** Iraq- Water resources ministry reclaims 14,000 donums in Karbala

(MENAFN - Aswat Al-Iraq) The water resources ministry finalized on Sunday the reclamation of 14,000 donums in al-Husseiniya area in Karbala province, at a total cost of 11.363 billion Iraqi dinars, according to a ministry press release.

"Technicians and engineers of the ministryâ€TMs general organization for irrigation and reclamation projects finalized works of contract 23 of the year 2007, which involved the reclamation of 14,000 donums,â€□ read the release as received by Aswat al-Iraq news agency.

 $\hat{a}\in \mathfrak{C}$ The newly-reclaimed lands lie on the right side of the River Euphrates within the provinces of Babel and Karbala, $\hat{a}\in \square$ it added.

One Iraqi donum equals 2,500 square meters.

The holy Shiite city of Karbala lies 110 km south of the Iraqi capital Baghdad.

"Iraq- Water resources ministry reclaims 14,000 donums in Karbala", 14/06/2012, online at: http://www.menafn.com/menafn/1093346190/Iraq-Water-resources-ministry-reclaims-14000-donums-Karbala

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* A Prince Leads Liquid Peace Initiative for Iraq, Jordan, Lebanon, Syria and Turkey

Green Prophet's Karin meeting Jordan's prince in 2010 in Switzerland.

Way back in 2010 a group of <u>high profile water researchers and dignitaries from the Middle East</u> met in Switzerland to find ways of making liquid peace. Diplomacy works through slow channels, but a new group of ministers and VIPs from around the region have agreed on long-term water cooperation. Chaired by Jordan's Prince Hassan bin Talal the group hopes to transform water into an instrument of cooperation between nations with their own internal problems, problems which could worsen with more water shortages. The countries are Iraq, Jordan, Lebanon, Syria and Turkey. The group was launched in Amman on April 10 this year and includes Yasar Yakis, the former Foreign Minister of Turkey, and Mohammad Chatah, the former Finance Minister of Lebanon. Others from Iraq and Syria will represent in due course.

The group is supported by the Government of Switzerland, in cooperation with the Strategic Foresight Group, a think tank based in Mumbai.

According to the Strategic Foresight Group, The High Level Group (that's the name!) was formed on the basis of the <u>Blue Peace report</u> (2011), published by them not long after the Swiss meeting back in 2010. The Group analyses dangers arising from depletion of water resources and the report has suggested that a special mechanism be formed for sustainable management of water resources between five countries: Iraq, Jordan, Lebanon, Syria and Turkey.

Recommended is exchange and calibration of hydrometric data, development and dissemination of new technologies, among other measures.

"A Prince Leads Liquid Peace Initiative for Iraq, Jordan, Lebanon, Syria and Turkey", 16/04/2012, online at: <u>http://www.greenprophet.com/2012/04/a-prince-leads-liquid-peace-initiative-for-iraq-jordan-lebanon-syria-and-turkey/</u>

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* Work on pipeline for Nemmeli desalination plant complete

The long-pending process of laying a pipeline to draw water from the sea to be treated at the upcoming desalination plant at Nemmeli, about 35 km south of Chennai, was completed on Monday. With a significant portion of the project finished, the plant is expected to be commissioned by September.

The work is significant as a 1,050 metre-long pipeline was sunk at a depth of nearly 14 metres on the sea side. It took three days for the mammoth operation to be completed.

Rough sea conditions had delayed the work for almost a year now, and pushed the deadline further to September. Around 85 per cent of the work to construct the plant with a capacity to treat 100 million litres a day (mld) has been completed so far.

Sources in VA Tech Wabag, which has been entrusted with the construction of the plant, said the giant 1,600 mm dia pipeline was towed into the sea, aligned using the digital global positioning system and sunk into the sea bed. A variety of marine and onshore equipment were used for the operation.

Nearly 265 mld of sea water will be drawn through this pipeline.

A similar process will be adopted for laying a 750 metre and 1,200 mm dia pipeline to discharge waste water from the plant. The work will begin by the end of this month.

Unlike the 100 mld desalination plant in Minjur, which supplies drinking water to the northern parts of the city, the one in Nemmeli will be owned by Chennai Metrowater.

Sources in Metrowater said that disc filters and ultra filtration membranes, which would remove sediment and finer sand particles from the raw water, are being imported from Israel. The sea water would then be conveyed to the reverse osmosis membranes that would remove salinity. The consignment will reach the city in May.

Similarly, additional reverse osmosis membranes are being imported from Japan. The Rs. 533.38 crore project will supply water to the southern parts of the city, including those recently merged under the Chennai Corporation.

The production cost of treated water at the Nemmeli plant will work out to Rs. 30 per kilolitre. Metrowater is purchasing water from the Minjur plant for Rs.48.66 per kl according to the bulk water purchase agreement with Chennai Water Desalination Limited, a special purpose vehicle promoted by IVRCL.

The tariff at Minjur is high as the company that has set up the plant also has to add in capital and operations costs. The plant at Nemmeli is being constructed with a grant obtained from the Central government, sources said.



Metrowater is also simultaneously carrying out work to lay a 66 km-long pipeline from the plant. Treated water will be transmitted to underground sumps being constructed in localities such as Akkarai, Kelambakkam and Velachery. About 80 per cent of the work has been completed so far.

At present, Metrowater supplies about 830 million litres a day to the city through pipelines and tankers.

"Work on pipeline for Nemmeli desalination plant complete"19/04/2012, online at: http://www.thehindu.com/news/cities/chennai/article3329190.ece

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NASA photos show Dead Sea dying

Thanks to massive water-diversion and salt-evaporation projects, satellite images show how the ancient lake is gradually living up to its name.



The <u>Dead Sea</u> earned its name not from death exactly, but from a relative lack of life. That's because, as a hypersaline lake, its water is far too salty for most wildlife to live there full-time (aside from <u>recently discovered microbes</u> on its seafloor).

But as the satellite images above illustrate, the Dead Sea itself has been gradually dying for decades. The trio of false-color images were taken at three points over the past 40 years — 1972, 1989 and 2011 — and reveal a dramatic transformation.

Captured by NASA's Landsat satellites, these images show deep waters as dark blue and shallow waters as bright blue, while pink and tan represent barren desert, green indicates sparse vegetation,



and red indicates dense vegetation. Near the center is the Lisan Peninsula, which now forms a land bridge across the Dead Sea.

So why is the Dead Sea becoming smaller and shallower? Largely because of <u>water diversions</u> from the Jordan River, which flows into the Dead Sea from the north. But as <u>NASA explains</u>, intensive salt-gathering projects are also encroaching from the south — and they're especially obvious in these photos. According to NASA:

"The ancient Egyptians used salts from the Dead Sea for mummification, fertilizers, and potash (a potassium-based salt). In the modern age, sodium chloride and potassium salts culled from the sea are used for water conditioning, road de-icing, and the manufacturing of polyvinyl chloride (PVC) plastics. The expansion of massive salt evaporation projects are clearly visible over the span of 39 years."

The Dead Sea is part of a depression in the Earth's crust between Africa and Asia, found on a rift where the two continents are pulling apart. It's the lowest surface feature anywhere on Earth, with shores located 1,300 feet below sea level. And thanks to its extreme saltiness, it's also known for its buoyancy: Delighted tourists float on its surface with ease, while frustrated divers struggle to explore its depths.

Jordan, Israel and the Palestinian Authority are currently planning <u>redevelopment projects</u> to save the Dead Sea, partly by pumping water from the Red Sea via pipelines. Jordan's project is slated to begin in early 2013, <u>the Jordan Times reports</u>, eventually moving 2.1 billion cubic meters of water from the Red Sea annually.

But the Dead Sea itself isn't the only regional treasure undergoing rehab. The Dead Sea Scrolls — a series of 972 biblical texts discovered around the sea between 1947 and 1956 — are being <u>reanalyzed</u> <u>by facial-recognition software</u>, which may help scholars better understand the scrolls' significance. And in the meantime, you can study them for yourself, thanks to a joint project by Google and the Israel Museum that recently <u>digitized some of the scrolls</u> and put them online.

"NASA photos show Dead Sea dying", 18/04/2012, online at: <u>http://www.mnn.com/earth-matters/wilderness-resources/blogs/nasa-photos-show-dead-sea-dying</u>

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Israeli companies to clean Ganges

Indian engineers, researchers seek Israeli water technologies for river's rejuvenation; deal estimated at \$3 billion

India is considering the possibility of integrating <u>Israeli technologies</u> in a national initiative to clean the <u>Ganges River</u>. For this purpose, engineers, researchers and representatives form water technology companies will visit <u>Israel</u> next week.

Over the past two months, the Indian government has been promoting a large scale endeavor to clean the Ganges River, which is considered holy in <u>Hinduism</u>.

Due to the river's importance as a fresh water source for as well as a ritual site, and considering that the river has become a source of infection and disease, the Indian government treats this initiative very seriously.

Recently, the Indian government decided to invite leading Israeli water technology companies to take part in the efforts to clean the river.

For this purpose, representatives of Indian research institutes, water technology companies and other relevant agencies will come to Israel to learn about the Israeli water and sewage purification technologies, and to examine ways to integrate them in the project.

The delegation will include representatives from the India Institute of Technology (IIT), an organization appointed by Indian government to advise and to formulate recommendations for the government regarding the technological solutions to be adopted for the cleaning endeavors.

The delegation will meet with several Israeli companies dealing with sewage purification, solid waste treatment, <u>desalination</u> and management of water resources, and visit their facilities. In addition, the delegation will meet with representatives of relevant government authorities such as the Israeli Water Authority.

The head of foreign trade authority in the Ministry of Industry, Trade and Labor Boaz Hirsch said that the commercial ties between Israel and India are growing tighter as India is becoming a primary actor in the world economy.

Oded Distal, Manager of the unit to promote investments in the Ministry of Industry, Trade and Labor responded: "Israel is considered a world leader in water technologies, and is well prepared to offer various solutions to the Indian government in this matter."

According to Ministry's data, In 2011 India was the 13th most important trade partner of Israel, and fourth in Asia. Israeli import from India totaled in \$798 millions compared to \$714 millions in the previous year, focusing primarily on chemicals, vehicle parts and rubber and plastic products.

The Indian delegation is organized by the Foreign Trade Administration, the Israel <u>NewTech</u> Program and the Israeli Export and International Cooperation institute.

"Israeli companies to clean Ganges", 21/04/2012, online at: http://www.ynetnews.com/articles/0,7340,L-4218471,00.html



* Israel's exploitation continues in occupied Golan Heights

The exploitation of Lake Masada in northern Golan was started in 1968 by an Israeli water company. About 1100 acres were confiscated for this company in the area around the lake, allowing Israelis to pump half a million cubic meters of its water annually and divert it to the Israeli settlements in the occupied Golan Heights.

Observers say Israeli policies have deprived the people in the occupied Syrian Golan Heights of their natural and inalienable rights. Experts say pumping the waters of Lake Masada is an economic and environmental disaster for the occupied area and is the clear violation of the Security Council resolution 465, which called for the protection of the natural resources of the territories under Israeli occupation.

Israel's water companies have said Israel receives one third of its water for both irrigation and drinking needs from the occupied Golan Heights and Mount Hermon.

Analysts say the suffering of the people in the occupied Golan Heights sees no sign of coming to an end as long as Israel's occupation and its strategic control over major resources in the occupied territory continue.

"Israel's exploitation continues in occupied Golan Heights", 15/04/2012, online at: <u>http://www.presstv.ir/detail/236443.html</u>

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Professor shares concerns with current state of Gaza

Through the eyes of Dr. Mads Gilbert, the Israeli siege in Gaza remains unchanged since its bombing three years ago during Operation Cast Lead.

Gilbert, a volunteer doctor during the 2008-2009 Israel-Gaza conflict, spoke at "Gaza, Three Years Later," last night at the Busch Campus Center, sponsored by BAKA: Students United for Middle Eastern Justice.

While Israeli militants occupied Gaza in 2009, Palestinian civilians were wounded and killed during the Israeli bombings in the Palestinian territory of Gaza, said Gilbert, a professor at the University Hospital of North Norway.

He said hospitals were filled with dead, wounded and screaming people during Operation Cast Lead.

"The children are back into the tents, not because they like camping but because their homes and villages were completely bombed by the Israeli army," Gilbert said.

The Palestinian territory in Gaza has become a difficult place to live because the Israeli siege has blockaded necessary resources, he said.

There are about 1.6 million Palestinians still imprisoned in Gaza who do not have access to clean drinking water or food, Gilbert said.

Fifty-four percent of Palestinians face food insecurity, and 90 percent of the water is undrinkable, he said.

Because individuals lack food, they have become susceptible to malnutrition and anemia, which reduces access to primary health care, he said.

The siege has also hindered any reconstruction in Gaza, Gilbert said.

"Thirty-nine percent of buildings [are] partly or totally destroyed, [and] 74 percent of bombed building are not repaired," he said. "There is a lack of reconstruction and normal life," he said.

Gilbert said the situation in Gaza is difficult to define, but it should not be referred to as a conflict.

"It's a difficult occupation," he said.

While Israel has occupied the Palestinian territory in Gaza, Gilbert said there is no logical reason as to why the Palestinians should have to give up their land, which was lost when Israel began occupying the area in the 1940s.



He said an important part of solidarity is not take pity on the victims of the siege. Individuals must see both sides, Gilbert said, not only the suffering but also the capacity to master.

The Israeli surge began because of foreign policy issues that concerned the Israeli government, he said.

He said the Israeli plan was to bomb Gaza, not to control Palestinians but to punish them.

Because Palestine is not a national state, the International Court had ruled that Israel would not be accountable for war crimes, he said.

"Who is held responsible for the killings and mutilations? The answer is nobody," he said.

Gilbert said solidarity is urgently needed, as Palestinians need support.

"Our government, our universities need to be educated in order to know how to act," Gilbert said. "You have a great responsibility to try to end this."

Students can become aware of the situation in Gaza through hearing Palestinian narratives, he said. Individuals who face violence acts and do not speak up are unable to prevent future massacres from occurring.

"Silence makes it part of the oppression and massacre," he said. "That must not be repeated."

Israel is not allowing critical supplies into Gaza, he said, which is an attack on the population's rights.

As a direct result of the siege, children's growth in Gaza has been stunted because there is a lack of protein, he said

"[They are] actually forced to have this handicap because of the politics of the Israeli government. This is a manmade disaster not a natural disaster," he said.

Gilbert said he is not sure why the killings are happening, but he is aware of some motives.

"[Israel is] shooting because they say they're killing terrorists," he said. "They're doing targeted killings everywhere. It's not peaceful in Gaza."

He said there will not be peace until the occupancy is lifted.

"Gaza will move on with or without [help from] us, they will not give up," he said.

Nadia Saleh, a School of Arts and Sciences senior, said the situation in Gaza shows what it means to be human.



"I think the medical solidarity is something we really need to think about and be more active in," she said. "It's not about access to health care — it's what leads up to that point."

Hajar Hasani, BAKA public relations officer, said the club hosted the event to raise awareness about the ongoing human rights abuses in Gaza.

Hasani said images showing victims of the Gaza bombings moved her.

"It's something you don't get to see in the American media" said Hasani, a School of Arts and Sciences sophomore. "The situation is still deteriorating, it's not getting better."

"Professor shares concerns with current state of Gaza", 17/04/2012, online at:

http://www.dailytargum.com/news/professor-shares-concerns-with-current-state-of-gaza/article_cfcfb602-8846-11e1-be58-0019bb30f31a.html

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✤ Israel Chemicals buys Swedish water treatment firm

(Reuters) - BK Giulini GmbH, a subsidiary of Israel Chemicals, said on Monday its BKG Water Solutions division had bought TIAMI VATTENKEMI, one of Scandinavia's largest water treatment companies, to boost its presence in northern Europe.

TIAMI, a privately held company founded in 1991, is based in Goteborg, Sweden, and provides industrial water treatment solutions, including chemicals, equipment and services. It also develops environmentally-friendly water treatment solutions.

Financial details were not disclosed.

"We intend to leverage TIAMI's unique product range, strong distribution network and excellent service capabilities to boost our presence in Scandinavian countries," Eli Glazer, general manager of BK Giulini, said in a statement.

Charles Weidhas, CEO of ICL's performance products division, said the purchase was in line with the company's strategy to expand its offering for the industrial water treatment sector, a rapidly developing market that has been building momentum over the last few years.

"The acquisition of TIAMI will position ICL as a leader in the water treatment industry in northern Europe," he said.

ICL, a fertiliser and specialty chemicals maker, is the world's sixth-largest producer of potash.

"Israel Chemicals buys Swedish water treatment firm", 16/04/2012, online at: http://www.reuters.com/article/2012/04/16/israelchem-tiami-idUSL6E8FG13T20120416

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Sewage trucks in Golan Heights to be monitored with GPS trackers

The company managing the Golan Heights' sewage disposal has recently started monitoring its trucks with a GPS tracking device, to make sure they don't dispose of the sewage illegally. Truck drivers from various companies frequently dump their contents in open areas, endangering groundwater and polluting the environment.

The company has also proposed to the Environmental Protection Ministry that it grant licenses to sewage-truck companies only if they agree to install a tracking device in their vehicles.

Kolhey Golan sewage and water corporation, which manages the sewage of more than 30 towns and villages in the Golan, now requires all the truck companies it works with to install a Global Positioning System tracking unit in its vehicles.

"We are about to publish another tender to operate sewage-removal trucks and installing this device, which enables us to determine the trucks' location at all times, will be one of the tender's conditions," Kolhey Golan CEO Rony Zigler said on Monday.

The company also intends to stipulate that every other sewage corporation operating the same trucks monitor them in the same way, he said.

Sewage trucks are used to drain leaks, unclog pipes and holes and collect the contents of chemical toilets at tourist sites. The collected waste is taken from cities and inhabited areas to sewage treatment plants, to protect the public health. However, truck drivers frequently unload their contents in open areas. "I haven't seen a truck doing so myself, but I have seen sewage flowing in places where it's forbidden to dispose of it," Zigler said.

The Environmental Protection Ministry has filed several indictments in recent years against sewagetruck drivers who disposed of the trucks' contents without the required permit and against the companies who own the trucks.

Three years ago two sewage-truck drivers were convicted in Nazareth's Magistrate's Court of illegally dumping the contents of 50 trucks after they collected sewage from a food plant. The sewage was dumped near a Kinneret drainage basin in the Galilee, endangering the groundwater in the region.

"We first operated the tracking devices in order to supervise the time table of the sewage removal," Zigler said.

"Then we realized it could be used to supervise the trucks and prevent them from polluting the environment." he said.

Two weeks ago Zigler wrote to Environmental Protection Minister Gilad Erdan about Kolhey Golan's method of monitoring its sewage trucks. The method raised much interest and ministry officials said



they may consider operating the system to monitor trucks carrying construction debris to landfills, officials told Haaretz.

Today many truck drivers dump construction debris illegally, frequently beyond the Green Line, to save transportation costs and avoid payment to the legal landfills.

"Sewage trucks in Golan Heights to be monitored with GPS trackers", Zafrir Rinat, 17/04/2012, online at: http://www.haaretz.com/news/national/sewage-trucks-in-golan-heights-to-be-monitored-with-gps-trackers-1.424682

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* Fayyad inaugurated first water dam in Palestine

RAMALLAH, April 16, 2012 (WAFA) – Prime Minister Salam Fayyad inaugurated Monday stage one of the first water dam to be built in Palestine at a cost of over \$1 million, according to a statement issued by Fayyad's office.

It said that on a visit to the village of Ouja and the Jordan Valley, Fayyad inaugurated the Ouja Dam, which he said is one of the projects to develop Area C that falls under full Israeli control and which makes more than 60% of the West Bank.

"Our non-stop efforts to develop the area known as Area C and every inch of our country aim mainly to benefit from our resources, mainly our water resources," he said.

He said that building the Ouja Dam is proof that "we will not be deterred by unfair classifications and names."

He said that he will not wait for Israeli permission to allow him to develop that area of Palestine, stressing that "this is our land and it is our natural right to develop this area and to serve our people living here."

He stressed that the Jordan Valley is part of the occupied Palestinian territory and a vital part of the future independent state of Palestine.

The Islamic Development Bank contributed \$1 million toward developing stage one of the Ouja Dam and the Palestinian Authority paid over \$30,000 toward that end. Work will now start on stage two of the project.

Fayyad condemned the Israeli army assault against Palestinian and international activists who wanted to hold a bicycle tour of the Jordan Valley area last week to show support for the Palestinians living in that area.

He said an Israeli army officer attacking with his rifle a Danish activist, which was widely covered by the media, is what happens to the Palestinian people on daily basis, urging the media to also cover these assaults.

Fayyad said there are 225 projects in the Jordan Valley area worth \$60 million of which 170 projects were completed.

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[&]quot;Fayyad inaugurated first water dam in Palestine", 16/04/2012, online at: http://english.wafa.ps/index.php?action=detail&id=1956



Church wants to build power plant

THE Church of Cyprus has concluded a preliminary agreement with the Israelis for the construction of a power plant here, Archbishop Chrysostomos has said.

The power station would be built on Church-owned land, and would generate around 2,000 megawatts (MW).

"A preliminary agreement has been signed, and the signing of a final agreement is pending," Chrysostomos told newsmen.

Initially the station – the first private-sector plant here – would work on heavy fuel oil, later to shift to natural gas. It would be located on Church land at Moni, near Limassol.

Chrysostomos's remarks came on Easter Sunday. On Monday the Prelate had an informal tete-a-tete with Israeli Foreign Minister Avigdor Lieberman, currently on an official visit to the island. However no statements were made after that meeting. Lieberman's delegation includes Alex Wiznitzer, chairman of Israel's national water company.

But in a recent interview with Stockwatch, Chrysostomos had said that the Church plans to diversify its business interests, turning to the energy sector.

In the interview, the business-oriented Prelate conceded that the Archbishopric faces cash-flow problems as a result of the ongoing financial crisis.

"I believe that it is time we stop putting all our eggs in one basket, that is, in the banking sector and hotels. That is why today we are turning to the energy sector," he told Stockwatch.

Chrysostomos said moreover that the Archbishopric had been in talks with "Israeli companies":

"They approached me and suggested that they buy land from the Church. They have proposed to us a sizeable stake in their share capital, and this proposal interests us.

"As you know, the Church owns a great deal of land. And the government needs space to build its [natural gas] terminal.

The Israelis wish to make investments in Cyprus, in other words to invest in the electricityproduction industry, electricity which they will sell at far lower prices than what is offered today by the EAC, since there will be competition, something which the European Union desires as well."

He went on to say: "We shall be putting up the land. We will not put up any money. We shall be stakeholders in the company, and the government will collect taxes. I hope that, within the context of encouraging foreign investment, our government will expedite the issuing of the relevant permits."



It is not clear at this point to whom the electricity would be sold, or which Israeli companies have been in talks with the Archbishopric. The Church of Cyprus has referred all queries on the matter to the Archbishop. Chrysostomos could not be reached for comment yesterday.

Likewise the EAC was unable to shed more light on the matter: "We shall try to clarify what the Church's plans are," EAC general manager Stelios Stylianou told the Mail.

Currently, the peak demand for electricity stands at around 1,100 MW. The electricity produced by the new power plant touted by the Archbishop would therefore presumably be intended not for domestic use, but most likely the Israeli market.

In that case, a cable linking the Cypriot and Israeli grids would also be needed.

In March, Israel and Cyprus signed an accord to lay an underwater electricity cable between them, the first stage in a bid to transfer power between Israel and mainland Europe. For security reasons, Israel wants to possess strategic electricity surpluses abroad.

It is not clear whether the power plant cited by the Archbishop is connected to this cable project or to some other venture.

Industry sources moreover point out that such agreements are concluded between governments and their respective foreign ministries and energy regulatory authorities – and not between the Church of one country and parties in another.

"Perhaps the agreement cited by the Archbishop is nothing more than a memorandum of understanding, which does not say a lot," the sources commented.

In addition, the agreement concerning the underwater electricity cable between Cyprus and Israel provided for cooperation between the EAC and the Israeli side only.

It's understood that no new application for electricity production has yet been submitted to the energy regulator, and the Archbishop made no mention of a feasibility plan. Chrysostomos has in the past met with Israel's Energy and Water Resources Minister Uzi Landau.

Both Lieberman and Landau are members of Israel's Yisrael Beiteinu party.

"Church wants to build power plant", 18/04/2012, online at: <u>http://www.cyprus-mail.com/israel/church-wants-build-power-plant/20120418</u>

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✤ A Model Water Code for the Mediterranean

The introduction of a model water code in the Mediterranean region could contribute to water law reform and promote equitable allocation and sustainable use of water resources.

Growing water scarcity around the world means water laws need to be modernized and reformed, particularly in arid regions such as the Mediterranean. Sustainable practices – both ancient and modern – should be embraced to preserve both water quantity and quality.

The academic sphere has long advocated sustainable water management. Unfortunately, there is often a translation gap between new understanding and the creation of laws. Students at Cornell Law School are working with an interdisciplinary team to examine the possible role of a model water code as a tool to promote sound local water governance in the Mediterranean region.

What is a model code, and how can it help?

A model code can be seen as a template for legal reform – like a cookbook, from which the cook can follow a recipe to the letter or modify it according to taste. Model codes do not seek to create uniformity between nations, but rather to promote clarification, greater simplicity and accessibility. They may also attempt to advance common understanding and application of relevant international legal instruments.

One example of an influential model code in the United States is the Model Penal Code, which was introduced in the 1960s and aimed to, among other things, update and standardize the penal code in the United States. There are 52 criminal codes in the US, with significant variance between them. Although many provisions of the code were not adopted in all (indeed, most) states, it has helped reform, and created greater consistency between the various states.

Even if it is not adopted, the presence of a model code can foster better understanding of the legal problems it addresses. By making sound institutional, technical, and legal understanding easily available to those who seek reform, the code may assist in the effective distribution of resources – both economic and otherwise.

What should a model code contain?

The key objective of the model water code is to help water-scarce nations to modernize and update their water laws in order to achieve equitable allocation and ensure sustainable use. One starting point for considering the components of a model water code are the hard and soft law instruments of international law. Portions of these agreements such as the Aarhus Convention contain provisions that can be translated to the local level.

Lessons from international law: the Aarhus Convention

The Aarhus pillars – part of the 1997 Aarhus Convention – provide useful guidelines for a model water code. These three pillars are access to information, public participation in decision-making and



access to justice. The first pillar imposes a duty on national governments to disseminate information and promote public awareness. The second pillar supports the inclusion of citizen groups in decisionmaking and has been interpreted to require an environmental impact assessment for projects that will have a significant adverse effect on the environment. The third pillar – access to justice – could be transposed into the model code as a provision allowing citizens and non-governmental organizations to sue authorities that have not fulfilled their duties. Adding such accountability measures will give government action concerning water more legitimacy.

The equitable allocation of water

The imbalance between supply and demand in water-scarce regions means that not all water demands from different sectors can be met and that demand from different sectors compete with each other. For example, agriculture is generally the largest water user, consuming over 90 percent of water in some countries. With an emphasis on equity, the needs of the agricultural sector must be balanced with those of other stakeholders. The model code would promote equitable allocation in two crucial ways: by promoting local water governance and by focusing on democratic participation. The model water code research group believes both of these are integral to equitable water use.

Water demands and uses are local. Therefore, promoting sound local governance in water management is essential, especially where water resources are stressed. With this local empowerment, however, must come the realization that there are common problems found in local government. For example, traditional local governance commonly marginalizes women. Because of concerns like this, a model code should also promote democratic participation, for instance through the creation of a broad-based citizen advisory council that represents different groups in society.

Emphasizing sustainable management

Sustainable management is essential in order to protect water resources in water-scarce nations. As argued above, this must involve local decision-making. Without the engagement of local knowledge, decisions may be made that are not suited to an area's environment. For example, the qanat is an ancient and sustainable technology used in many arid Mediterranean countries. Through a network of tunnels and wells, qanats ensure a fairly consistent source of water in both wet and dry years, and avoid evaporation losses. Unfortunately, in some countries these water supply systems have been badly damaged through neglect or because of other water projects. Attention to local expertise could help avoid situations like this, both preserving the water supply and conserving economic resources.

Further, without local acceptance, both water projects and water laws could fail. A first step towards gaining local acceptance is to ensure that relevant information is available and accessible, mirroring the first pillar of the Aarhus Convention. Disseminating information requires relevant authorities to collect and compile data about the water quality and quantity in their jurisdictions, and to make this information available to the public. It also implies the obligation of the authorities to respond to requests for information. Ideally, technical service providers, who are trained and available to work with local communities and landowners, could disseminate this information. Technical providers can play a vital role in educating the public in such critical matters as water conservation, and protection of the local water resources.



Heavy water use in the tourism sector needs to be balanced against existing uses. Source: Zrim

Most water-scarce areas must balance competing interests. For example, countries drawing significant support from tourism may need to balance the need for new hotels and tourist attractions – and their prospective heavy use of water – against existing water uses. In order to encourage sustainable practices while remaining realistic, the model water code should include a comprehensive water plan requirement. Such a plan would provide a rational context for decision-making regarding any new development schemes.

The model code and privatization

To address water shortage and quality problems, many countries have privatized water utilities. In some countries, such as Chile, privatization has improved the quality of water supplies and expanded distribution. However, other projects have suffered from insufficient capitalization, political unpopularity and long-term unsustainability. These shortcomings, arising from inadequate planning and a lack of transparency, drain states of both money and water. A model code can assist municipalities in considering whether to privatize and in determining the sound legal instruments by which to do so.

Projects often inaccurately forecast consumption or face public resistance. For instance, in Cochabamba, Bolivia, the private operator predicted that both previous consumers and newly connected users would consume water at the same rate. The new users actually consumed far less, and profits plummeted. Likewise, in the Jordanian capital Amman, under Amman's management contract with the French multinational water company Suez, high tariff rates charged by the operator prompted commercial users to seek alternative sources, which depleted the groundwater supply. The operator also failed to give advance notice of price increases. These oversights led to political opposition and eventual discontinuance of both projects.

A model code could address problems like this by requiring the state to invite local participation in project planning. This involvement could occur as consultation in developing the privatization policy or in the form of public review after the government has devised a plan.

Moreover, as exemplified by privatization in Turkey, conflict between operators (trying increase consumption) and the state (promoting water conservation) can exacerbate scarcity problems. A model code could temper divergence by requiring the state to consider alignment tools like performance penalties and rewards, debt guarantees or profit-sharing agreements. Finally, the code could also guide the parties' choice of dispute-resolving bodies to enforce these mechanisms.

Where do we go from here?

As the number of countries suffering from water scarcity grows, sound water laws become increasingly vital. Especially at the community level, decision-makers and major users of water will need effective legal tools. A model water code is such a tool. The model water code group at Cornell Law School is continuing its preliminary research, and will begin developing a draft model code for field-testing within a year. After a testing and re-formulation period, the code will be released online.



Water at Cornell University

The model water code project is part of the Water Law Clinic, taught by Professor Keith Porter, at Cornell Law School. The group recently presented at "Water Scarcity and Policy in the Middle East and Mediterranean," a conference organized by Cornell's David R. Atkinson Center for a Sustainable Future. The Atkinson Center aims to promote sustainability researchers across Cornell University, a lengthy list that spans 10 colleges and 55 departments. This includes a project, led by Professors Gail Holst-Warhaft and Tammo Steenhuis, on water governance in the Mediterranean and Middle East.

Writers: Diana Biller, Natasha Bhushan, Tamaron Greene and Matt Danforth are students at Cornell Law School and editors at the Cornell Journal of Law and Public Policy and the Cornell International Law Journal. The authors would like to express special thanks to Professor Keith Porter, Professor Gail Holst-Warhaft and Sheila Saia.

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Water Scarcity Leads More to Peace Than War (Interview)

Geoffrey Dabelko at the 12th National Conference on Science, Policy, and the Environment in Washington D.C.

A couple of months ago a friend of mine studying at the Monterey Institute of International Studies engaged with a Green Prophet post about the link <u>between water and security</u>. As it turns out, she is studying with adjunct professor Geoffrey D. Dabelko, who is also director of the <u>Environmental</u> <u>Change and Security Program (ECSP)</u>, a nonpartisan policy forum on environment, population, health, and security issues at the <u>Woodrow Wilson International Center for Scholars</u> in Washington, DC.

He is currently focusing on climate change and security with an emphasis on managing transboundary fresh water resources. Since my friend introduced me to Geoffrey, he has appeared on <u>NPR's Diane Rehm Show</u>, a leading radio show in the United States, to talk about a recently released US National Intelligence Council report that focused on the link between water and global security. We have continued <u>that conversation (link to transcript)</u> here in order to better understand whether our region's water scarcity is more likely to lead to war or peace.

Green Prophet: So, for context, can you say a little bit about the National Intelligence report and why it was compiled?

Geoff Dabelko: The water and security assessment from the National Intelligence Council was done at the request of Secretary of State Hllary Clinton. The National Intelligence Council has a strong history of looking at long term trends in the environmental, technological, demographic realms and working to understand how trends in these areas are and could be part of larger economic, political, and social dynamics that may pose national security issues for the United States.

Green Prophet: There were seven river basins of particular concern, of which four are located in the MENA region: the Euphrates, Jordan, Nile, and the Tigris. Why do you think these are of particular importance?

Geoff Dabelko: I do not explicitly know the criteria for their selection of the seven basins. But I think these four, like the other three, have some common characteristics. They are basins that where the rivers are shared by two or more countries/territories that are heavily dependent on the waters, that have relations among the states that include uncertain, tense, or even overtly hostile relationships, that are now and/or likely to experience big growth in demand for the water resource based on both population growth and consumption growth, that at the same time there is concern that climate change will at least increase variability, timing, and or quantity of that water (both scarcity and abundance ie floods).

And then the report focuses on the institutional river basin arrangements and differentiates among their assessed capacities for addressing these current and future stresses. That diversity aside, it is fair to say that the transboundary water institutions remain a priority yet a challenge for addressing the multiple dimensions of the water relationship. I say multiple given all the different uses water



performs in most of these settings (transport, irrigation, hydropower, culture, industrial, household, etc).

Green Prophet: Something that came out of your NPR discussion that really surprised me, and may surprise our readers, is that water scarcity (where a river, say, is shared between more than one country) more often leads to cooperation than it does to conflict.

Geoff Dabelko: This insight was established first and foremost by the research done by Dr. Aaron Wolf of Oregon State University and his Basins at Risk work. Essentially he looked at all bilateral and multilateral interactions between states over water and coded them most conflictual ie started a war to most cooperative ie signed a basin agreement. He found a lot in the middle ie verbal support on cooperation side and saber rattling in rhetoric on the conflict side.

But there was also a lot of formal cooperation in basin agreements, particularly in the last couple of decades. It didn't just happen, took a lot of work, took some inducements etc but there is a lot of precedent and evidence of tacit and formal cooperation. On the formal conflict side, there were a small number relative to the nearly 2000 cases they coded. I think (and we'd have to check to make sure have the numbers right) but in the 2003 piece (before the 2010 update) I think it was just 37 of them were the second from most conflictual and formal war was zero. Now Arab-Israeli were 27 of the 37 so your region of focus explained most of those, but it was still dramatic evidence against the water wars are here frame that so dominates newspaper headlines and politicians speeches.

Green Prophet: Although, it did occur to me that the conditions we are about to face, as a result of climate change and population growth, are quite unlike any that have occurred in the past.

Geoff Dabelko: Your follow up is the most interesting question – will the future look like the past? Does studying the past tell us what will happen in the future? We put a lot of faith in the past helping us understand the future and it rests at the center of much of the way we analyze things. But at the same time, we also, especially in the natural world, have established patterns of thresholds and tipping points and sudden changes. Will that happen with these natural-social coupled challenges like shared river basins.

It is also critical to say that there is a LOT of violence around water. It is just within states rather than between them. In fact some say there is an inverse relationship between the level of analysis (local to international) and the level of violence.

Some suggest it is something about the properties of water – it is heavy, it moves, it isn't predictable when it comes, it is hard to invade, pick it up, carry it home with you. You have to stay to use it. And with "virtual water" ie food, it is much cheaper to trade in food if you have water deficits than it is to invade to get the water needed for agriculture.

Green Prophet: Many people believe that Israel's occupation of Palestininan territory is related to having more control over water (in the Golan Heights as well) but that this motivation is disguised by its political ideology. What do you think about that?

Geoff Dabelko: Assigning weight to motivations for such wider decisions is a tough one. It is not a specific situation I would consider myself expert in. But I would say that in part that situation shows



how it is insufficient to focus JUST on what causes the start of a conflict. So while one can say water hasn't caused states to fight, it does not mean water isn't incredibly important to the continuation, the ebb and flow, and the termination of a conflict and the prospect for sustaining peace. So the cause of the conflict is just one stage along a conflict continuum from before conflict, during conflict and after conflict. So water is clearly a critical part of Palestinian-Israeli negotiations or Indian-Pakistani negotiations whenever those negotiations occur. Water is very high politics and critical for getting to peace and keeping a peace. So if we just focus on what causes a conflict, we miss this importance of resources in a conflict setting.

That said, the very same case presents a good example of cooperation during conflict that can have benefits around the resource as well as wider health and even trust and confidence building impacts, ones that we can hope plays a part in fostering a wider confidence in the relationship. So I'm sure you are familiar with <u>FoEME</u>.

Their good water neighbors program rests on the simple notion that kids on both sides of the conflict get sick from polluted water.

Based on that interdependence, they have paired contiguous communities for school to school, then mayor to mayor, programs that address the problem of usually untreated <u>Palestinian waste water</u> that adversely affects both sides. With very modest education and small scale infrastructure projects, they make a specific difference in the place. But that cooperation, over time, has been part of building community links, serving as a "lifeline for dialogue" in times of conflict, that in some cases has supported wider advances of understanding that spill over into other dimensions of the otherwise conflictual relationship.

Green Prophet: Do you think that the MENA region needs outside help to resolve its water issues?

Geoff Dabelko: I think the experience of the <u>Nile Basin Initiative</u>, where the World Bank and UNDP has provided a facilitation role but with the riparians running the show, has shown that there can be a role for outside institutions to support a process in productive ways. I am not saying NBI was perfect and it is obviously in a rough patch now given political changes in the basin. But process matters, building trust is slow, a technical approach can build up to a political one, and there can be a role if the outside institution is seen as neutral, responding to in region demands rather than driving the agenda, and patient.

Green Prophet: Are you hopeful, based on your knowledge of groups like FoEME, that we will be able to find solutions to our water woes?

Geoff Dabelko:Efforts like FOEME will represent pieces in the puzzle of addressing water problems in the MENA region. Solutions to such wide-ranging challenges are hard to come by. But improving the direct situation around water and its connected areas of health, economic growth, agriculture, on to politics and culture – these are things efforts like FOEME's can contribute to meaningfully on local, national, regional, and international levels.



Green Prophet: Finally, can you give me a "worse case scenario" and – more importantly – a sense of the tools we can use to prevent that?

Geoff Dabelko: Worst case scenarios and predictions in general are worst case scenarios. In some ways you could say we have already achieved some with the nearly 1 billion globally without access to clean water. We've just become accustomed to it and amazingly given those numbers, the situation has improved for literally tens of millions. I think one can envisage crises associated with water that are acute and dramatic (Yemen's unsustainable depletion of groundwater and fossil aquifers for example) that lead to tremendous privation and disruption. Yet the human development conditions are already severe. So when does it become a worse case scenario?

There are possible flashpoints when for example upstream countries intentionally deny flow to downstream dependent countries in already water scarce situations. The growth of consumption and population makes these scenarios more likely but not certain or inevitable. One step that we know could and should be taken now is to invest in the transboundary water management institutions that should help states navigate these more precarious times ahead.

Investing effort and resource in diffuse steps like transboundary water basin organizations, regular sharing of data, developing a shared vision that moves the parties from asserting their rights to water, to evaluating all the nees for the water, to taking steps to share the benefits water can provide. Those steps take time, learning, trust-building, and a willingness to think long term. In other words, they aren't patterns of interaction that can develop quickly or in a crisis. They require foresight and politial will on the part of leadership to support such processes that can easily be unpopular or seem unimportant while they are going on. But such efforts will be of incalculable benefit in the face of increased challenges in the water sector.

"Water Scarcity Leads More to Peace Than War (Interview)", 17/04/2012, online at: http://www.greenprophet.com/2012/04/water-scarcity-peace-war/

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Prevent Water Wars in the Middle East

It's all about WATER. The Middle East and North Africa (MENA) region is the most water scarce in the world, and drought conditions are only expected to worsen, even as populations rapidly increase. 12 of the world's 15 most water-scarce countries — Algeria, Libya, Tunisia, Jordan, Qatar, Saudi Arabia, Yemen, Oman, the United Arab Emirates, Kuwait, Bahrain, Israel and Palestine — are in the Middle East, and have experienced 30 years of high population growth, which only exacerbates scarce resources.

In a US intelligence community <u>assessment</u> released last month, analysts concluded that "water problems—shortages, poor water quality, or floods—will risk instability, state failure, and increase regional tensions." An earlier 2009 World Bank report on <u>combating water scarcity</u> in the Middle East and North Africa (MENA) region also noted, "It is almost a feat that the Middle East, which is plagued by conflicts, has so far managed to avoid major water wars, even though water is a life-and-death economic issue for the people of the region. But for many of these nations, which already are treading the razor's edge of conflict, water is becoming increasingly a catalyst for confrontation – and an issue of national security and foreign policy as well as domestic stability."

Earlier this month, Tom Friedman described in a column titled, <u>"The Other Arab Spring</u>"how the "Arab awakening was driven not only by political and economic stresses, but, less visibly, by environmental, population and climate stresses as well (emphasis added). If we focus only on the former and not the latter, we will never be able to help stabilize these societies." Friedman closes with an appeal: "We and the Arabs need to figure out — and fast — more ways to partner to mitigate the environmental threats where we can..."

Euphrates takes these issues, (and Friedman's appeal!) seriously, and we not only follow the environmental and resource challenges in the region, but we partner with an environmental learning organization, the <u>Center for Ecological Living and Learning</u> (CELL), to lead three-month study abroad trips to the Middle East, focusing on sustainability and peace. Water scarcity is a primary subject students tackle, both in the classroom and by doing on-site service projects with environmental organizations, such as Friends of the Earth Middle East (FOEME).

CELL is currently accepting applications for the next <u>three-month study trip to Israel, West Bank</u>, <u>and Jordan</u>. If you know of students interested in experiencing up close and personally the world's most pressing needs — peace and sustainability — this is the trip for them!

"Prevent Water Wars in the Middle East", 19/04/2012, online at: <u>http://euphratesinstitute.org/2012/04/prevent-water-wars-in-the-middle-east/</u>

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ImperiumWatch: The Outlook for Water

Will there be enough of it by 2040?

As issues like universal healthcare, the fight for the Republican presidential nomination and the shooting of an unarmed teenager in Florida grab attention day by day, it's important not to forget a more enduring, more crucial issue that faces the U.S. and the world. That issue is water.

Water, the lack of it (and in flood time, the excess of it) is becoming more of a problem all the time. Soon, according to a report commissioned for the State Department, water shortages will be the problem behind many other problems, since water is vital for industrial processes as well as human health and life.

In language that is not hysterical, the report makes a prediction that's nevertheless ominous: "Between now and 2040, fresh water availability will not keep up with demand absent more effective management of water resources." And it's not just talking about third world countries. Citing an estimate from the 2030 Water Resources Group, it predicts that "one-third of the world's population will live near water basins where the water deficit will be larger than 50 percent by 2030." First on the list of those basins: "the western United States," which is "already experiencing high 'water stress'—when the annual renewable freshwater supplies are below 1,700 cubic meters per person per year." (Remember the news last year about ranchers selling off their herds in bone-dry Texas?) Other such areas are located in Australia, Africa, the Middle East, South Asia and China.

"Population increases, migration, and changing human consumption patterns resulting from economic growth will be key drivers of rising fresh water demand," says the report, produced by the Defense Intelligence Agency with input from the Department of Energy, the CIA and other agencies. And the fact that more people will be eating meat rather than grain is a problem as well, since it takes much more water to produce meat than grain (15,000 liters of water for one kilogram of beef as opposed to 1,500 for one kilogram of wheat).

The report's authors are not optimistic about privatization of water supplies as a tool for efficiency in water use; they cite rises in water prices and "lack of proper governance" in situations in which privatization has been tried. They are more optimistic about ways of improving water use in agriculture, which, they find, uses 68 percent of fresh water (homes and industry use 19 percent, 10 percent goes for energy and 3 percent simply evaporates from reservoirs).

Close to home, water-rich Massachusetts is experiencing drought. Over the last few weeks, dry, windy weather had local officials in the Valley warning that outdoor areas could easily catch fire. The National Oceanic and Atmospheric Administration designated Massachusetts an area of "extreme" drought in February, with a narrow strip of Western Massachusetts only a little better off with the designation of "severe" drought.

Soon we may be as conscious of our water footprints as we now are of our carbon footprints. We may be thinking as hard about products and practices (like unnecessary lawn watering and car washing, to start) that are water guzzlers as we've learned to think about vehicles that are gas guzzlers.

"ImperiumWatch: The Outlook for Water", 19/04/2012, online at: <u>http://www.valleyadvocate.com/article.cfm?aid=14969</u>

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Cooperative alternatives in the Middle East water needs

Diego Mayo Martínez.- The Middle East water issues are seen as a strategic tool for the neighbouring countries in order to build their political stability, but also to strengthen their legitimacy over these precious resources. For that reason, it is significant to inventorize the diverse possible formulas in order to have a better understanding of the difficulty to come to viable alternatives for this region. In this discussion, the western powers, especially the European Union could play an important role for the coming period.

Feasible and fruitful alternatives in water issues will always depend on the condition of willingness among Middle East countries to cooperate. As such, **some of these solutions involve just Israel and Palestine, as it will be in the interest of both of them to cooperate with each other**. Accordingly, the agreement to develop a joint desalinisation plant in Gaza by Israel and Palestine could alleviate the water irrigation to the Negev area and the Gaza Strip. Likewise, the construction of purification plants, due the low quality water in the Gaza strip and the surrounding Israeli settlements, could be beneficial to narrow this quality and quantity water difficulties.

Other possibilities will require teamwork within the neighbouring countries of this waterless region. As such, water transfers represent potential options to address this water shortage. One of the few possibilities is to transfer water from the Nile to the Gaza Strip to augment its reserves and use of water. This project would consist of widening the El-salaam Dam and the Egyptian Sinai Dam. In similar way, Turkey represents a second alternative to reroute waters. A project was defined in 1988 that could have great impact on the possibility to increase these water resources in the region. It consisted of diverting water from both Seyhan and Ceyhan Rivers, dividing the project on both western and eastern segments. The western branch would have covered 2700 km from Turkey to Syria, Jordan, Palestine and Saudi Arabia. The eastern portion would have covered 3900 km from Turkey to the Gulf States such as Kuwait, Saudi Arabia, Bahrain, Qatar, the United Arab Emirates and Oman. In fact, compared with the desalinisation plants, this project will be much more affordable and viable. Nevertheless, the funds to finance, develop and implement these projects were lacking. Consequently, it was deliberated to build a shorter pipeline to divert water to Jordan, Syria and Palestine with the possibility to count on Israel if the peace process moves forward. Last but not least, there was also another project considered, which had the tri-lateral initiative agreement of United States, Jordan and Israel. The feasibility was investigated of the construction of a canal from the Red Sea to the Dead Sea in order to refill the Dead Sea while generating electric energy. What is more, this energy would be used to set in motion the desalinisation plants, using a procedure called hydropower reverse osmosis. The system will use the pressure generated by the extreme fall, through a membrane, to remove the salt particles, allowing the fresh water pass by through it. That water pressure would be sufficient to generate enough electricity to impel this osmosis process for further desalinisation.

Cooperative models could play a very significant function in order to finance and build solid water infrastructure, through implementing those plans based on Middle East countries needs. As aforementioned, the proposed desalinisation plant in Gaza gives the perfect example of hypothetic cooperation with fruitful results for both the conflicting parties. Evenly finance, in proportion to its utilization, would signify a major step forward in the process of solving the conflict. Both ideas, the desalination and purification plants, represent potential ways to solve the efficiency problem and


what is more, to contribute to alleviate the environmental harm that is done in Gaza and the West Bank. Indeed, Israel and Palestine should be interested in addressing this problem with common sense in order to guarantee future resources for the coming generations.

Concerning the water transfers it is important to understand the political agenda of the aforementioned states. As such, Egypt has to deal with its riparian states, like for instance Ethiopia. If Ethiopia decides to increase their water needs for agricultural purpose, Egypt will be affected. Besides, without reconciliation between Israel and Palestine the probability that Egypt agrees on implementing these projects are unlikely to happen. Egyptians would not complicate their own political agenda with no guarantee that the proposed transfer results will have a major positive impact. In relation to Turkey, it represents a key alternative for water resources. The reason is that **Turkey has more abundance of water than its neighbouring countries and what is more, the willingness to share it**. The proposed projects contemplate the possibility to include Israel as benefactor of the mentioned water transfers, but this option has no room for the Arab countries. Accordingly, the political atmosphere in relation to Israel impedes these proposed shares of water and its further construction.

In relation with the Red Sea-Dead Seal canal, there are also diverse factors to take into account. Firstly, security concerns are mandatory as the canal itself would be an easy target for terrorist groups. Hence, security in Palestine would be essential not only to attract foreign investments, but also because not including <u>Palestine</u> in the project is probably going to complicate its evolution. Secondly, the critic of the environmental activists is that the water transfer would change water chemistry in the Dead Sea and consequently would damage it. The most viable option for them is to leave the flow of Jordan River to recharge the Dead Sea as it is. Also the project is too expensive to justify. So, in order to address this last statement, **marketing the project as essential for the peace process would be the way to ask for financial support from the United States and the European Union countries.**

The idea that the conflict resolution is more and more dependent on water issues is palpable. Thus, agreements about water in the Middle East are becoming more controversial. It is significant to comprehend that the aridity in the region is as evident as the expected growth population, which is expected to be nine million and 3 million to Israel and Palestine respectively. Hence, water issues turn out to be crucial in the Arab-Israeli conflict, so the consensus settlement to build wished-for projects depends on cooperation, not only among the parties involved, but also from the United States and the European Union. Both EU and US can afford the necessary finances for the proposal of these wished-for projects. The opportunity to implement an alternative European plan in order to solve the conflict could be set in motion through the water issues. If the European Union were able to succeed attracting Israel and the Arab countries to a common ground, the benefits would have a tremendous impact in the Middle East as a whole. For that reason, Turkey could be pointed as the key element because it is the only Middle East state willing to share water. Thus, increasing diplomatic, commercial and political relations between Turkey and the Arab world would be an interesting line to follow.

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* Yemen: Revisiting Demography After the Arab Spring

Along with other countries where the Arab Spring caught hold, Yemen has been gripped by major upheaval over the past year. Although President Ali Abdullah Saleh finally ceded power in February after his administration's violent reprisals failed to deter protesters, the country remains at a crossroads. As its political future continues to evolve, the new government must also address a range of deep-seated economic and social challenges. In addition to claiming more than 2,000 lives, the crisis has undermined Yemenis' livelihoods and even their access to food. A recent World Food Programme survey found that more than one-fifth of Yemen's population is living in conditions of "severe food insecurity" – double the rate measured three years ago – and another fifth is facing moderate difficulty in feeding themselves and their families.

Yemen's population trajectory is one of the underlying factors shaping its prospects for stability and the success of the movement towards democracy. Two years ago, I wrote a case study about the effect of demographic conditions on the prospects for development in Yemen. Political tumult aside, the country's demographic picture remains the same, with UN projections showing that Yemen has the second-youngest population in the world after Uganda. "If we had dealt with the population issue seriously, we would have avoided the current problems and crises in Yemen," Jamela Saleh Al-Raiby, the deputy minister of public health and population, recently commented in the Yemen Times.

The Demographic Challenge Continues

Countries with a very young age structure face higher vulnerability to civil conflict and lower chances of democratic governance. Among the countries where a push for democracy took root during the Arab Spring, Yemen has the youngest age structure. As political demographer Richard Cincotta noted last March, it was more likely than either Egypt or Tunisia to experience ongoing political violence when evaluated in demographic terms. Seventy-five percent of Yemen's population is younger than 30, compared to 60 percent in Egypt and 52 percent in Tunisia, according to UN data. Driven by a fertility rate of about 5.5 children per woman – nearly twice as high as the regional average – each younger age group is larger than the last. If fertility remains constant, the population would double to 50 million by the early 2030s and triple by 2045. In the more hopeful scenario in which fertility declines toward three children per woman, the population would still double by 2040.

The number of children younger than 15, whose access to education is critical for the country's development, has grown by two million (25 percent) in just 10 years. Likewise, the number of young people between the ages of 15 and 29, who are completing education, entering the job market and often hoping to marry, grew from less than five million in 2000 to more than seven million in 2010.

Early marriage, which is a key driver of high fertility rates, is common in Yemen. Half of current reproductive-age women were married before they turned 18, and the government has stalled on attempts to institute a minimum age of marriage. About 28 percent of married women are using



contraception and another 24 percent would prefer to avoid pregnancy but are not using contraception, demonstrating a substantial unmet need for family planning.

Unemployment, Poverty and a Water Crisis

Population trends are closely tied to three other key challenges for Yemen: economic underdevelopment, natural resource shortages, and declining health. Yemen's economy has not kept pace with the employment needs of its youthful and rapidly growing population. As of 2008, the adult unemployment rate was 15 percent, reflecting the share of working age people who are actively seeking jobs. While the female labor force is small due to traditional gender roles, unemployment is much higher among women (41 percent) than men (12 percent), and twice as many women are illiterate as men. Even among working adults, income is often too low to meet basic living standards, as more than two-fifths of the population lives in poverty.

The oil and gas sector comprises half of the country's GDP, according to the World Bank, but oil reserves and revenues are declining. Prior to Saleh's ouster, the government had begun trimming fuel subsidies, which consume 20 to 25 percent of its expenditures. In addition, economic expansion has been hampered by the ubiquitous use of qat, a mild narcotic whose production employs about 15 percent of the workforce but consumes 10 percent of household budgets, 10 percent of land area devoted to agriculture, one third of all ground water extracted, and untold productivity lost due to daily use of the drug.

While both oil and agriculture are under strain, the most critical natural resource for Yemen is arguably water. While Yemen has always been an arid country without rivers or freshwater lakes to draw upon, population growth is one of the primary reasons that water shortages have reached such critical levels. At a Wilson Center seminar on Yemen last year, the founder of the Ministry of Water and the Environment noted that the country's level of water availability is 14 times below the threshold for water scarcity. With unpredictable rainfall, farmers and families rely on water drawn from slow-regenerating aquifers, consuming it at a much higher rate than the groundwater can be replenished.

Civil Unrest Affects Health and Nutrition

Despite recent increases in the number of health clinics and hospitals, Yemen's health system remains weak and out of reach for most of the population. The government spends six percent of its budget on health, less than one-third as much as it contributes in fuel subsidies. As of 2010, only 42 percent of the population could reach public health care, and the political crisis has further inhibited their access. According to the local office of Marie Stopes International, a non-governmental organization that provides family planning and reproductive health services, less than 10 percent of health facilities in a recent assessment had sufficient personnel or medicines and other supplies.



In addition to limiting people's access to health facilities and to reducing the coverage of services, the recent instability has greatly increased already-high levels of malnutrition and hunger. Government and UNICEF surveys in two of the country's governorates last year showed that more than 30 percent of children are malnourished, on par with areas in Somalia. Vaccination rates dropped after the 2011 unrest began, causing experts to raise concerns about the possibility of higher child mortality rates.

The Road Ahead

Ultimately, the future of Yemen's demography will be driven in large part by the strength of reproductive health programming. Current efforts emphasize outreach, such as building support among religious leaders and disseminating messages through a weekly television program. "While 10 years ago, these issues were taboo...there is much improvement in [the] knowledge and attitude of the community," said Deputy Minister of Public Health and Population Al-Raiby in a column for The Huffington Post.

Some observers counter the prevailing pessimism about Yemen's prospects, suggesting that the recent power transition offers hope for political reform. Ongoing and proposed changes, such as opening doors to the opposition, promoting cooperation among powerful tribes, and increasing the role of regional institutions, are promising in their potential to tamp down current tensions. But successes in the political arena must be paired with investments in the structural factors – demographic, economic, and social development – that provide entrenched, long-term challenges to Yemen's future.

"Yemen: Revisiting Demography After the Arab Spring", Elizabeth Leahy Madsen, 17/04/2012, online at: <u>http://www.newsecuritybeat.org/2012/04/yemen-revisiting-demography-after-arab.html</u>

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***** UN deputy humanitarian chief concerned over severe humanitarian situation in Yemen

UNITED NATIONS, April 17 (Xinhua) -- Catherine Bragg, deputy UN humanitarian chief, on Tuesday underlined the need to further support the people of Yemen, which continue to face deteriorating humanitarian situations, a UN spokesman told reporters here.

Bragg, UN assistant secretary-general for humanitarian affairs and deputy emergency relief coordinator, made the statement when returning from a two-day mission to Yemen, the deputy UN spokesperson, Eduardo del Buey, said at the daily news briefing.

"Bragg, underscored the need for a strong commitment from the international community to support the millions of people in Yemen facing a worsening humanitarian crisis," del Buey said.

Bragg is "very concerned by the acute humanitarian situation in Yemen, despite the recent, political developments," the spokesman said, adding that millions of people in Yemen are still in need of "healthcare, clean water, and basic sanitation, food and nutrition. "

According to new data, about five million people are dealing with food insecurity, where at least 800,000 children are suffering from severe malnutrition, doubling in the past two years.

In November of last year, Bragg reported a growing influx of refugees from the Horn of Africa, as well as malnutrition in children which mirrored that of Somalia. She also forecasted a worsening humanitarian situation, saying "humanitarian needs are expected to deteriorate over the next year, and we must do everything we can to make sure that these needs are not overshadowed by the political agenda."

Bragg continued to stress that "the most vulnerable will need all the support they can get, until we start seeing the fruit of political developments."

She also noted that some humanitarian organizations have expanded their work in Yemen, requesting a total of 447 million U. S. dollars to further assist with the humanitarian needs.

"UN deputy humanitarian chief concerned over severe humanitarian situation in Yemen", 18/04/2012, online at: http://news.xinhuanet.com/english/world/2012-04/18/c_131533634.htm?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=37dfa6b890-RSS_EMAIL_CAMPAIGN&utm_medium=email

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* Water Scarcity May Add to Instability in Africa, Kufuor Says

The worsening problem of water scarcity may contribute to political instability in sub-Saharan<u>Africa</u>, said John Kufuor, the head of a World Bank-affiliated effort to improve living conditions in poor countries.

"People migrate to find water anywhere if there's a scarcity situation," Kufuor, a former president of Ghana who now leads the Sanitation and Water for All <u>partnership</u>, said today in an interview in <u>Washington</u>. "People have fought wars to access water," he said. The organization includes more than 30 developing countries, the <u>United Nations</u> and the Bill and Melinda Gates Foundation. Competition for water in the next decade will fuel instability in parts of Africa, South Asia and the Middle East that are important to U.S. national security, according to a U.S. intelligence report released last month. Nations will be more likely to use water as a bargaining chip in international negotiations, according to the report.

Kufuor, 73, received the World Food Prize in 2011 for his work to alleviate hunger in Ghana, the West African nation that he led from 2001 to 2009. Water supplies and sanitation conditions may be more important than food security in poorer countries partly because of the public-health risks they pose in growing urban areas, he said.

The sanitation and water partnership meets at the <u>World Bank</u> every two years.

"Water Scarcity May Add to Instability in Africa, Kufuor Says", 18/04/2012, online at: http://www.bloomberg.com/news/2012-04-18/water-scarcity-may-add-to-instability-in-africa-kufuorsays.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=f860f94f35-RSS_EMAIL_CAMPAIGN&utm_medium=email

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✤ 'Huge' water resource exists under Africa

Scientists say the notoriously dry continent of Africa is sitting on a vast reservoir of groundwater.

They argue that the total volume of water in aquifers underground is 100 times the amount found on the surface.

The team have produced the most detailed map yet of the scale and potential of this hidden resource.

<u>Writing in the journal Environmental Research Letters</u>, they stress that large scale drilling might not be the best way of increasing water supplies.

Across Africa more than 300 million people are said not to have access to safe drinking water.

Demand for water is set to grow markedly in coming decades due to population growth and the need for irrigation to grow crops.



Source: Environmental Research Letters

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WATER RESEARCH PROGRAMME -Weekly Bulletin-

Freshwater rivers and lakes are subject to seasonal floods and droughts that can limit their availability for people and for agriculture. At present only 5% of arable land is irrigated.

Now scientists have for the first time been able to carry out a continent-wide analysis of the water that is hidden under the surface in aquifers. Researchers from the British Geological Survey and University College London (UCL) have mapped in detail the amount and potential yield of this groundwater resource across the continent.

Helen Bonsor is from the BGS is one of the authors of the paper. She says that up until now groundwater was out of sight and out of mind. She hopes the new maps will open people's eyes to the potential.

"Where there's greatest ground water storage is in northern Africa, in the large sedimentary basins, in Libya, Algeria and Chad," she said.

"The amount of storage in those basins is equivalent to 75m thickness of water across that area - it's a huge amount."

Ancient events

Due to changes in climate that have turned the Sahara into a desert over centuries many of the aquifers underneath were last filled with water over 5,000 years ago.

The scientists collated their information from existing hydro-geological maps from national governments as well as 283 aquifer studies.

The researchers say their new maps indicate that many countries currently designated as "water scarce" have substantial groundwater reserves.

However, the scientists are cautious about the best way of accessing these hidden resources. They suggest that widespread drilling of large boreholes might not work.

Dr Alan MacDonald, lead author of the study, told the BBC: "High yielding boreholes should not be developed without a thorough understanding of the local groundwater conditions.

"Appropriately sited and developed boreholes for low yielding rural water supply and hand pumps are likely to be successful."

With many aquifers not being filled due to a lack of rain, the scientists are worried that large-scale borehole developments could rapidly deplete the resource.

According to Helen Bonsor, sometimes the slower means of extraction can be more efficient.

"Much lower storage aquifers are present across much of sub-Saharan Africa," she explained.



"However, our work shows that with careful exploring and construction, there is sufficient groundwater under Africa to support low yielding water supplies for drinking and community irrigation."

The scientists say that there are sufficient reserves to be able to cope with the vagaries of climate change.

"Even in the lowest storage aquifers in semi arid areas with currently very little rainfall, ground water is indicated to have a residence time in the ground of 20 to 70 years." Dr Bonsor said.

"So at present extraction rates for drinking and small scale irrigation for agriculture groundwater will provide and will continue to provide a buffer to climate variability."

"Huge' water resource exists under Africa", 20/04/2012, online at: http://www.bbc.co.uk/news/science-environment-17775211

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✤ Groundwater resources mapped in Africa

As water use increases throughout the world, Africa could be said to be lagging behind in supply. 300 million poor and vulnerable people are without safe drinking water there and only 5% of the continent is irrigated. <u>Global warming</u> has dealt a savage hand to the Sahel and much of the rest of Africa.

The authors of a new study in IOP Science *Environmental Research Letters* argue that groundwater has to be crucial for Africa's future water supplies. Uneven distribution is the big problem with low yield bore-holes the rule for much of the south. In North Africa, huge resources in the form of sedimentary aquifers reside in Libya, Algeria, Sudan and Egypt.

So these 0.66 million km³ of underground stores may compensate somewhat for the dry future Africa certainly faces. But how do the richer geologies of the north compensate for the dearth of liquid gold in Central Africa?

Groundwater storage for Africa based on the effective porosity and saturated aquifer thickness. Panel (a) shows a map of groundwater storage expressed as water depth in millimetres with modern annual recharge for comparison. Panel (b) shows the volume of groundwater storage for each country; the error bars are calculated by recalculating storage using the full ranges of effective porosity and thickness for each aquifer, rather than the best estimate. Annual renewable freshwater availability, (calculated by the FAO in 2005) generally used in water scarcity assessments is shown for comparison; Credit: IOP Science/Environmental Research Letters

Water quality is not considered unfortunately because little data is available. Fluoride, arsenic, iron, manganese and chloride comprise some of the least palatable contaminations, but cities around Africa lack sanitation and adequate sewerage treatment, leading to widespread evidence of large faecal coliform bacteria and nitrate contaminations.

Nevertheless, this magnificent mineral endowment of water is still the largest source available for all the development that has to be made. There is 20X the water available in African lakes and 100X the annual renewable freshwater. The investment in food production for growing populations relies on this amount of water for irrigation as well as for the use of the people themselves.

Aquifer productivity for Africa showing the likely interquartile range for boreholes drilled and sited using appropriate techniques and expertise; Credit: British Geological Survey

These maps reveal an answer to the problems surrounding agricultural answers to the food shortages endemic to many African countries. Boreholes are being dug, but in appropriate cases, the effort can be planned to supply all the needs of a sizeable region. Some boreholes in lucky areas can supply more than 5 litres per second, increasing the productivity beyond that normally possible. Unfortunately, the limit for small boreholes is a depth of 50m (and some groundwater lies at 100m).

Careful further mapping, exploration of geologies and subsequent constrained development is essential to take advantage of the natural resource of water. Handpumps with a yield of only 0.1 to



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0.3 litres per second will be the universal answer for many, but so desperate are those droughts and famines we have seen, the answers to national needs have to be universally discussed and planned.

"Groundwater resources mapped in Africa", 21/04/2012, online at: <u>http://www.earthtimes.org/scitech/groundwater-resources-africa-mapped/1937/</u>

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Middle East Water Woes Beg for Environmental Sewage Solutions

The environment is politics and in the Middle East this is ever so stark, ravaged by internal socio-religiopolitical conflicts and international wars. Wars internally and externally are based on oppression, division, exclusion, land theft, and expropriation of the Middle East's oil reserves. The Middle East is the globe's oil capital. Those who want to own it are traditional colonial powers who will do anything and promise anything from political freedom to militarisation to democracy to get at it; it's why war and conflict still proliferate in the region.

Easily forgotten in all the wars and conflicts are survival basic resources such as water. Water for thirst, water for industry, water for agriculture and water for sanitation. The Middle East's oil-rich countries are able to cross-subsidise oil-money for purchases of food crops or agri-land for growing food to be imported into the region. This is neither environmentally sustainable nor economically.

Things will run dry, monetary-wise and resource-wise, so hard rapid environmental resource conservation must dictate all immediate and future plans.

Accessing ancient geological aquifers for stored groundwater slowed down with lack of sustainable use and management of resources. When groundwater supplies started dwindling, desalination became the next option, the primary social-water-feeder.

Desalination is not only expensive but emits green house gases, adding to climate alteration in a region that naturally is already climate-harsh.

At the end of the day, land and all natural resources are the basis for conflicts. The conditions imposed on Palestine by Israel for instance are highlighted constantly, but the struggle for survival resources are not. One of the many access battles facing the Palestinians is the right to its water flowing beneath the the West Bank and Gaza. <u>Sanitation issues in the West Bank</u> are critical with only one functioning wastewater plant with inadequate treatment to enable wastewater clean-up and modification for re-use.

According to the Applied Research Institute of Jerusalem (2011), "Only 6.33 percent of the generated wastewater in the West Bank is treated in centralized and collective wastewater treatment plants located in the West Bank, the remaining is discharged untreated into the environment; part of which is being treated by Israeli treatment plants located inside Israel."

Untreated sewage disposal outfalls to the oceans are numerous and reflect on the callous regard for the protection of water resources together with a lack of a proper sanitation framework. Managing water resources in arid desert regions should be a top government responsibility, but yet irresponsible water management is the choice as opposed to a guarded conservation approach to water, one where wastewater is recycled for reuse.

The sea is just one dumping ground for untreated sewage, the other is surface and groundwater infiltration of sewage. There exists no formal sanitation framework, let alone a water management one, so above Gaza, the West Bank's dominant raw sewage disposal is through *in situ* pit latrines. These are cesspits, which are basically holes in the ground. The seepage is an obvious tie to water contamination through the soil profile to aquifers.

The political conflict tie-in on sanitation is the uncontrolled raw sewage releases from the Israeli settlements into the environment, which must be managed in an all encompassing regional water and waste crisis plan.

Sanitation in the Middle East is in crisis, and therefore intrinsically tied to the growing water contamination crisis. Intervention should be localised yet tied to a regional commitment and management programme.



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According to Franack based on a collation of ARIJ data, "in the West Bank, only 56 communities are connected to a sewage network, whereas 513 communities use cesspits to dispose of their sewage. This means that out of 2,444,500 people inhabiting the West Bank, only 753,590 people have access to sewage networks, covering only 32 percent of the West Bank population.

"The areas not served by the water network generally dispose of their waste either through cesspits or directly into open channels into the environment."

Raw sewage has direct implications for healthy drinkable water, healthy food growth, healthy disease-free populations (eColi risks multiply with every raw sewage discharge into the environment), healthy ecosystems and habitats, healthy water for protein source species such as fish that humans depend on, healthy water for vegetation growth that not only cool arid regions but offer a balanced oxygen supply to also mitigate air pollution.

A water-stressed region, the Middle East with its arid soil conditions and low vegetation cover, is a climate change hotspot and water issues will lead to to a social and environmental crisis with burgeoning population growth.

Water knows no boundaries, and no matter human geopolitical conflict will flow over, beyond and under borders, so peace is key to sustainable human survival and environmental protection.

<u>Engaging in desalination</u> as a cure for the water crisis, and avoiding effective sewage contamination issues is an illogically management issue afflicting not only the Middle East but the general human condition of starting something anew with total avoidance and solutions of the existing bad practices.

Making the current sanitation crisis a priority, addressing infrastructural leaks in the formal system, illegal raw sewage disposals out to sea and in the ground, replacing pit latrines/cesspits, recycling wastewater for water conservation and sewage management is the stance governments must adopt with urgency or the water crisis in arid regions such as the Middle-East will be the greatest crisis ever imagined making socio-political-religiowars the least of the survival issue.

Climate change impacts will heighten the resource stress in the Middle East, what should unfold is emergency environmental rehabilitation, proper water and sanitation infrastructure for recycling.

Sustainable and equitable management and use of the Middle-East's natural resources will certainly build relationships between nations and strengthen co-operation for an effective social, environmental and economic region.

If regional peace comes from sectoral bonds as a default of good environmental relations, that would indeed be progress. The environment is political and personal, and the sooner we link into that philosophy the sooner we respect and manage natural resources as a species survival issue.

"Middle East Water Woes Beg for Environmental Sewage Solutions", 15/04/2012, online at: <u>http://www.greenprophet.com/2012/04/water-wars-middle-east/</u>

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Bangladesh needs trans-boundary water policy

India, Pakistan, Nepal and Bhutan have planned 552 hydropower projects in the Himalayas. Some of these are under construction, some have been completed and still others are on the drawing board. When they are implemented some of them will impact Bangladesh.

The Himalayan mountain range is the centre point from which scores of Asian rivers originate. The Ganges, Brahmaputra and the tributary of Irabarti are the major rivers that also flow through Bangladesh. Our country shares waters of 54 rivers with India and 3 with Myanmar.

If upstream countries divert normal water flow through dams, we will see many of our rivers dry up, our irrigation system destroyed and life killed in our water bodies. If the water flowing through these common rivers is not managed well, it can flood a large part of Bangladesh each year.

India is planning and implementing several projects to dam up our common rivers. The fact is that we are not even taken into confidence about their intentions. We are not privy to the progress made in the projects upstream.

When a dam is built, the river valley is first tampered with and there is a great loss of habitat there. Second, the dam leads to a change in the morphology of the downstream river bed and (in our case) the delta. Our coastline changes too, due to changed sediment load. An important aspect is change in the quality of water downstream. The nutrient load of a river is depleted. Biodiversity, which is unique to a river, then changes as organisms begin to flow in low quantities.

All these changes also lead to changes in climate conditions. Siltation occurs with variation in water table, and aquatic life is disturbed in the lower riparian areas. There is little or no recharge of ground water aquifers and therefore there is a rise in pollution. However, the greatest effect is on the socioeconomic environment. Due to less water available downstream, there is little or no employment. People have less drinking water. Production in factories slows down too. The economy can go into a tail spin. Public agitation begins. People start to move to areas where more water is available. Internal migration becomes the norm and the state is forced to rehabilitate masses of people in already crowded areas.

Under these circumstances, Bangladesh needs to craft a trans-boundary water policy, if it does not want to face future political and economic chaos.

But before we do that we need to first understand the legal principles which guide the regime of trans-boundary rivers. The principle of equitable use of trans-boundary water resources and the obligation not to cause harm in the management of trans-boundary water resources must be understood. There are these three different paths towards these goals:

Signing treaties or agreements that just stop short of allocating water between riparian states. These are treaties that define navigation rights of the states through which the river runs through or to combat pollution in the common river;

Initialing agreements allocating water between states;



Signing agreements for joint management of internationally shared rivers.

A river is described as international if it flows geographically through or between territories of sovereign states. From a legal point of view, any river becomes international if a riparian state does not have all the powers over the waters of that river. In Bangladesh, we have no control over the flow of 57 rivers flowing through our territory, out of a total of 800 rivers and tributaries.

The UN Convention on the Law of Non-navigational Uses of International Water Courses (yet to be in force) provides a framework for cooperation within international river basins. From the first century of the present millennium there have been more than 3,600 instruments relating to international water courses. Some 286 international agreements or treaties are also in place. However, most treaties concerning shared waters are bilateral and relate to specific rivers.

Treaties are guided by customary international law or state practice. Such guidelines are based on one or more of the following doctrines:

1) Harmon Doctrine of Absolute Sovereignty: This claims absolute freedom of a riparian state, often the upper riparian. However, this has never got international acceptance;

2) Doctrine of Absolute Riverian Integrity: Here a state may not alter the natural flow of a river passing through its territory in any manner that will affect the water in another state;

3) Doctrine of Limited Territorial Sovereignty: This happens to be the most accepted doctrine in resolving international water disputes. It follows the general legal obligation to use ones property in a manner that it will not cause injury to others;

4) Doctrine of Communality of International Waters: This treats the total volume of basin water (in our case we have three river basins : the Padma, the Meghna and the Brahmaputra) as a shared resource. Each river basin is a single geographic and economic unit that overlaps two or more states, and its resources from the rivers must be shared.

5) Doctrine of Correlative Rights: This emphasises the best utilisation of joint water resources rather than on ownership rights.

From these doctrines, certain legal norms have evolved. They are:

The duty to cooperate and negotiate;

Prohibition of practices that can cause major injuries to other states (like Tipaimukh Dam);

The duty to prior consultation; and

Principle of equitable utilisation of shared resources.

We must therefore choose from the above and firm up our position. We must also seek out the legal international norms that will protect our national interest when we sit down to manage the freshwater resource flowing through our land. Several experts have said that we may embrace a combination of



the Doctrine of Limited Territorial Sovereignty, the Doctrine of Communality of International Waters and the Doctrine of Correlative Rights.

Our diplomats and water experts should brainstorm intensively with politicians to craft the most appropriate trans-boundary water policy. We have very little time in hand, as India is rushing to build structures as well as work on river linking projects. Any structure that will divert the waters of the common rivers would mean disaster for Bangladesh. We are already faced with the vicissitudes of climate change. We cannot afford a double jeopardy.

We may also consult with international legal experts, the World Bank and other multilateral agencies. If need be we should raise our voice in the United Nations or take our case to the International Court to get our rights established, if bilateral negotiations are purposely delayed or adverse outcomes are anticipated.

In this matter, we are reminded of a saying by Franklin Roosevelt: "To reach a port, we must sail -- not tie at anchor. Sail and not drift." Today, our water policy must not remain adrift.

"Bangladesh needs trans-boundary water policy", 17/04/2012, online at: <u>http://www.thedailystar.net/newDesign/news-details.php?nid=230380</u>

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***** Water Wars: Why India and Pakistan Are Squaring Off Over Their Rivers

India's Wular Lake, a popular picnic and tourist spot nestled in the Kashmir Valley, is an unlikely site for conflict. But India's plan to build a structure on the Jhelum River at the mouth of the lake that will allow it to release water during the river's lean winter months has outraged neighboring Pakistan, which believes the project will give India the power to control how much water flows downstream to its farmers. After two and a half decades of deadlock and 15 marathon rounds of bilateral talks — the most recent occurring in late March — the countries appear a long way from finding common ground.

The dispute isn't the first of its kind, nor will it be the last. The waters of the Indus River and tributaries like the Jhelum — and the dams built on them by India — have long been one of the main points of contention between the rival neighbors, along with the disputed region of Kashmir itself and cross-border terrorism. Pakistan, whose agriculture-dominated economy is heavily reliant on the Indus and its tributaries, fears upstream dams allow India to manipulate the flows of water as it sees fit. Many in Pakistan accuse New Delhi of wantonly exacerbating the country's dire water shortages, choking its agricultural production and ruining livelihoods.

India dismisses these accusations as paranoid and without scientific backing. Its dams are run-of-theriver, it says, aimed at generating hydroelectricity, or in the case of the Tulbul navigation project on the Jhelum, meeting other development needs like facilitating year-round trade. India's Indus Water Commissioner G. Aranganathan says that after India fills its reservoirs in the initial stages of each project, it only uses the water it needs to run its turbines and doesn't prevent any from flowing into Pakistan. "There is absolutely no question of interrupting or reducing Pakistan's water supply," he tells TIME.

The countries' early leaders anticipated this fierce rivalry over the waters that straddle their volatile border. Following protracted and painstaking negotiations, they signed an accord in 1960 called the Indus Waters Treaty that determined exactly how the region's rivers are to be divided. In the treaty, control over the three "eastern" rivers — the Beas, Ravi and Sutlej — was given to India and the three "western" rivers — the Indus, Chenab and Jhelum — to Pakistan. More controversial, however, were the provisions on how the waters were to be shared. Since Pakistan's rivers flow through India first, the treaty allowed India to use them for irrigation, transport and power generation, while laying down precise do's and don'ts for Indian building projects along the way.

The treaty has been widely hailed as a success, having survived three post-independence wars between the hostile nuclear neighbors. But its resilience is increasingly being tested by challenges thrown up by the 21st century. For one, Pakistan is on the brink of water scarcity. Its once-lush agricultural fields, which employ half of all Pakistanis and account for a quarter of its GDP, are now frequently parched. This predicament, experts say, is attributable in large part to the country's haphazard water management policies, unproductive agricultural practices, dilapidated infrastructure and grossly inadequate water storage facilities. Climate change, too, has begun to have an impact. A recent Dutch study found that by 2050, shrinking glaciers are predicted to reduce the flows of the Indus by 8%. But in Pakistan, which is deeply distrustful of its larger and more powerful neighbor, the country's crippling water shortage is seen as a direct result of India's upstream dams and water projects.



Indeed, India has ramped up its hydroelectricity projects in recent years to try to boost its woefully inadequate power supplies. The government has a total of 45 projects either already completed or in the proposal stage on the western rivers, some as large as 1000 megawatt and many as small as 2 and 3 megawatt. This expansion has irked Islamabad. "India is putting more and more restrictions and constrictions on Pakistan's waters," Kamal Majidulla, Pakistani Prime Minister Yousuf Raza Gillani's special assistant on water resources and agriculture, tells TIME.

A 2011 U.S. Senate Foreign Relations Committee report said that studies show no single dam will affect Pakistan's access to water, but the cumulative effect of multiple hydroelectric projects could give India the ability to store enough water to limit Pakistan's supply at crucial moments in the growing season. India has never abused its water supplies in this way, the report adds, and New Delhi rejects the theory as an unsubstantiated hypothesis. But the report's observations serve as a suitable analogy for India and Pakistan's water conflicts overall. While no single legal or diplomatic tussle will rupture the fragile relations between the countries, the cumulative effect of a series of standoffs could cause tensions to boil over.

The countries have already been embroiled in two high-profile legal fights over water. In 2005, Pakistan challenged India's 450-megawatt Baglihar dam before a World Bank-appointed neutral expert and lost. And last year, the countries went head to head at the International Court of Arbitration over India's 330-megawatt Kishanganga project in Jammu and Kashmir. The court has ordered India to temporarily stop some constructions on the dam while assessments are being made. Pakistan is also considering arbitration to iron out differences over another dam — the Nimoo Bazgo — on the Indus.

(MORE: Will Anyone in Pakistan Cash in on America's \$10 Million Terror-Suspect Bounty?)

"Unfortunately, we are going towards conflict and not conflict resolution," says Majidulla, who heads a body called the Pakistan Trans-border Water Organization, formed in September to monitor what he calls "increased activity" on the Indian side of the border. The countries' antagonistic political relationship has certainly not helped to ease their differences over water. "Given the mutual hostility between the two countries, it is not surprising that there is a tendency in Pakistan to believe that the scarcity it is experiencing or fearing is partly attributable to upper riparian actions," Ramaswamy Iyer, India's former secretary for water resources, wrote in an op-ed in the *Hindu* newspaper. At times, the rhetoric has even reached a fevered pitch, such as when Hafiz Saeed, head of the Pakistani militant group Jamaat-u-Dawa and alleged mastermind of the 2008 Mumbai attacks, whipped up public sentiment against India's so-called "water terrorism" in 2010 by using slogans like "water flows or blood." Few believe India and Pakistan will actually go to war over the disputes, but one thing is for certain: water is making it harder for the long-time rivals to put their enmity behind them.

"Water Wars: Why India and Pakistan Are Squaring Off Over Their Rivers", 16/04/2012, online at: http://www.time.com/time/world/article/0,8599,2111601,00.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts &utm_campaign=0b5ca8a07a-RSS_EMAIL_CAMPAIGN&utm_medium=email

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* Bohai Sea Pipeline Could Open China's Northern Coal Fields

XI'AN, China—Last November, as government leaders considered energy goals for China's upcoming 12th Five-Year Plan—which was adopted last month—60-year-old geographer Huo Youguang took the podium at an academic meeting about water scarcity and coal production in Xinjiang Uyghur Autonomous Region, one of the driest inhabited areas on the planet.

Over the next half-hour or so, Huo described a first-of-its-kind transcontinental pipeline that he believed could be a breakthrough in developing more fossil energy from Xinjiang and China's other northern coal-rich provinces, while conserving the region's scarce freshwater reserves.

His proposal: drop a pipe into the Bohai Sea in China's east, draw more than 340,000 cubic meters (90 million gallons) of seawater a day into a complex of coastal desalination plants, and then pump this water 1,400 meters uphill for more than 600 kilometers (nearly 400 miles) to Xilinhot, where it will be used for coal mining operations.

By the time Huo finished his presentation, he'd ignited a national engineering debate surrounding the cost, practicality, and feasibility of using vast amounts of purified seawater to produce more coal for China's modernization, while simultaneously easing northern China's water shortage. By suggesting a giant project that some authorities considered daffy, Huo also confirmed just how vulnerable China's powerful engine of growth is to deepening water scarcity, particularly in the energy-rich northern and western provinces, now the primary focus of China's development and modernization.

Xilinhot, an Inner Mongolia city of 177,000, lies atop a mammoth and, so far, untouchable coal reserve. Chinese authorities estimate Xilinhot's proven and unproven coal reserves to contain 1.4 trillion metric tons. At China's current rate of coal production—more than 3 billion metric tons annually—the Xilinhot reserves alone could power the country for the next 425 years.

If the first \$US 6 billion stretch of the Bohai Pipeline were to perform as Huo anticipates, it could be expanded and sent an additional 2,800 kilometers (1,850 miles) from Xilinhot—crossing the rest of Inner Mongolia and through northern Gansu Province—all the way to the western province of Xinjiang, where Chinese geologists say even larger coal reserves exist. Leaders are pressing the region to double current coal production capacity to 200 million metric tons of coal per year by 2015.

Collision Approaches

As China rushes deeper into the second decade of the 21st century, the nation's energy production and consumption trend is a steep, increasing line. It is that vector—fast-rising energy demand confronting water scarcity—that is proving so difficult to resolve.

Huo Youguang, a professor in the Center for Environment and Modern Agriculture Engineering at Xi'an Jiaotong University in Shanxi Province, is convinced a transcontinental pipeline will help.



Back in December, Huo told Circle of Blue that the rapid transformation of the growing and modern desert cities of Inner Mongolia, Gansu, Xinjiang, Ningxia, and Shanxi provinces are endangered by their diminishing freshwater reserves.

These regions contain the nation's largest proven and unproven coal reserves. But developing coal reserves, along with the power and processing infrastructure to consume coal, uses tens of billions of gallons of water each year—water that isn't available in a region that receives just a few inches of rain annually and where climate change is reducing snow pack.

"We need water, and the sea can provide it," Huo said, noting that he had first proposed an across-the-north route for a pipeline from the Bohai Sea back in 1997.

In 2002, a separate academic team from Beijing University proposed a similar route, but further to the north. However, both pipelines—which would transport water more than 3,400 kilometers (2,100 miles) to Xinjiang—are seen by a number of Chinese engineers as impractical.

And even if the pipeline were built, say critics, would it really be capable of slaking the big thirst of northern China's coal sector?

Evading Water-Energy Choke Point, For Now

Of all the threats over the next decade to China's rapid modernization, arguably none is more significant than assuring adequate supplies of coal, which accounts for 70 percent of the nation's total energy production and consumption. In the previous chapters of *Choke Point: China*, Circle of Blue has reported the essential outlines of a potentially ruinous and fast-approaching confrontation between rising demand for coal and steadily diminishing freshwater reserves.

To date, China has managed to largely evade the water-energy collision. Once regarded as one of the world's worst water wasters, since the mid-1990s, China has enacted and enforced water-efficiency and water-conservation measures for industries, cities, and agricultural lands.

Proposed industrial plants are required to assess the availability of water in the surrounding region and prove there is enough for plant operations and processing prior to construction—and then they must recycle water used during manufacturing and processing.

China's big cities, led by Beijing, are erecting new buildings that include a "gray water" plumbing system kept separate from potable tap water supply—that delivers recycled wastewater for washing cars and flushing toilets. In 2009, <u>there were about 200 Beijing communities receiving gray water</u>; most of these were economically affordable housing units, since the price of gray water is reduced by government subsidies and is therefore much cheaper than tap water.



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Since 1998, according to national records, China has taken 8.5 million hectares (21 million acres) of farmland out of production, while also <u>improving irrigation practices</u> on millions of additional hectares of cropland. In 2010, according to China's Ministry of Water Resources, agriculture used 359 billion cubic meters of water, or 60 percent of all water used in China last year. As recently as 1990, China's farmers used 83 percent, of all water used nationally.

China is nearing completion of a <u>mammoth water-transport project</u> from the south to the dry north, along with launching the world's most-aggressive programs for building <u>water-sipping wind and solar power plants</u> in its northern deserts, seawater-cooled nuclear plants along its coast, and <u>hydropower dams in its southwest</u>—all of which provide more power, while reducing coal consumption and water use.

All of these water-saving measures helped keep the increase in water use to just 16 percent—or about one percent annually—from 1995 to 2010. During the same period, China's GDP grew almost eight-fold and industrial water use increased by close to 50 percent.

In China, Coal is King

Over the last decade, China's economy—the world's second largest—has grown about 10 percent annually, fueled primarily by soaring coal production.

Last year, China produced 3.15 billion metric tons of coal—three times more than in 2000—much of it mined and processed in six northern China provinces. Inner Mongolia alone produced 782 million metric tons, ahead of the 741 million metric tons produced in neighboring Shanxi Province. Chinese energy experts and academics anticipate that, at current levels of growth, the country will need to produce over 4 billion metric tons annually by 2020 to keep up with demand.

But the driest regions in the nation are the very same northern provinces where much of the coal lies.

From 2004 to 2009, according to the National Bureau of Statistics, Inner Mongolia lost 46.8 million cubic meters (12.3 billion gallons) from its total freshwater reserve, or a drop of 15 percent. During the same period, Xinjiang lost 95.5 million cubic meters (25.2 billion gallons).

China's goal is to meet energy demands, save water, and use the one fossil fuel that it has in abundance. The nation is pursuing multiple paths for assuring its coal supply—generally from existing mines—with the water it has. But new northern coal reserves can't be developed without more water, coal industry executives and academic experts told Circle of Blue.

In the mountains and deserts of Inner Mongolia, the deep mines of Ningxia and Shanxi provinces, the buckled roads of Shanxi, and the jammed railroad lines of Hebei, China is pursuing its coal-based economic strategy with a fervor unmatched by any other nation.



North of Baotou—an Inner Mongolia city of 1.5 million—a double-tracked rail line lies along the northern shore of the Kunlin Reservoir. Every six minutes or so, the low whistle of a single diesel locomotive sounds across the lake, and a long train of 40 coal-loaded railcars rattles into view. All day long, seven days a week, loaded trains pass the reservoir, hauling coal from nearby mines to power plants, steel mills, and coal-to-chemical refineries.

China transports two-thirds of its coal by rail, according to national figures. The rail system is clogged with traffic and close to reaching capacity.

The other third—more than 1 billion metric tons a year—is shipped by truck.

China's truck manufacturing industry is soaring, as is the price of diesel fuel, pushed by rising demand and languishing supplies. Outside Baotou, the two-lane road to the Daqing Shan open pit coal mine is being ground to pulverized asphalt under the wheels of thousands of coal trucks, hauling 80-tonne loads. China's heavy truck dealers sold 1 million vehicles in 2010, a 60 percent increase from 2009, according to China Truck. In 2000, according to <u>ChinaSignpost.com</u>, an American Web site that follows China trends, heavy truck sales totaled 83,000 vehicles.

In northern China, coal truck traffic produces huge tie-ups that can take hours to clear. Last August, for example, traffic heading to Beijing on Hebei Province's Dongyanhe Highway was so heavy that it caused a 100-kilometer (62-mile) traffic jam that took two weeks to clear.

At the Shenhua Group's underground mine near Ordos in Inner Mongolia, miners manage machines that claw nearly 14 million metric tons of coal annually from a seam beneath the desert. Much of the coal is processed and then sent down the road to supply one of China's four new coal-to-liquids refineries that produce diesel fuel.

Omnipresent candy-cane-striped smoke stacks, rising in clusters, pour clouds of eye-stinging and lungclogging pollution into the air of nearly every major Chinese city.

Across the northern provinces, Chinese energy companies and utilities are constructing state-of-the-art coalfired power plants. More than 20 "supercritical" and "ultra-supercritical" coal-fired power plants—which produce 10 to 20 percent more electricity per ton of coal consumed and which use 15 to 20 percent less water by burning hotter and at higher pressure—have been built. In the Ningxia Hui Autonomous Region, <u>several</u> <u>other coal-fired power plants</u> have been built, each one saving 70 to 80 percent of the water needed to cool a conventional coal-fired plant by using an air-cooling system instead.

In the city of Tianjin, south of Beijing, a consortium of coal companies and utilities is building the \$US 1 billion, 650-megawatt GreenGen Power Plant. The coal-fired gasification plant—which has the capacity to be



cooled by freshwater or seawater—is a demonstration project to produce energy more efficiently, as well as to capture and permanently dispose of climate-changing carbon emissions.

"The freshwater and seawater systems are in parallel," said S. Ming Sung, an engineer and the chief representative in Asia for the Clean Air Task Force. "Obviously that costs more; but China is smart enough to test both systems. As they build more, the costs will come down."

More Water Needed

Still, underlying northern China's expanding coal sector is a growing need for more water in a region where access to freshwater is getting steadily more difficult.

By 2020, according to government projections, total national water may rise to 670 billion cubic meters (177 trillion gallons) annually—up from 599 billion cubic meters (158 trillion gallons) in 2010—and the coal sector's share of national water use will rise to 27 percent from about 20 percent in 2010.

Much of the increase is due to the growing need for more coal-and more power plants to burn it.

Next to agriculture, the production and consumption of coal is the largest industrial user of fresh water. Last year, the coal sector used 120 billion cubic meters, or more than a fifth of the 599 billion cubic meters of water that China used nationally, according to the Ministry of Water Resources. All that water was devoted to mining and processing coal, cooling power plants, powering cement and steel plants, and turning an estimated 470 million metric tons of coal into fuels, chemicals, synthetic gas, and other products.

China's big 1,000-MW coal-fired power plants use upwards of 3,800 cubic meters (1 million gallons) of water per hour for operations and cooling. This equates to 76,000 cubic meters (20 million gallons) a day, or 26 million cubic meters (7 billion gallons) a year.

China's electrical generating capacity from coal was 750 GW in 2010, and is heading toward 1,250 GW in 2020, according to government projections. In other words, even with the new fleet of efficient plants, China's coal-fired power plants alone will use roughly 34 billion cubic meters (9 trillion gallons) of water annually by 2020.

The growing coal-conversion sector will also increase water use. Depending on the product—diesel fuel, chemicals, natural gas—for every metric ton of coal converted, three to 15 metric tons (three to 15 cubic meters; 790 to 4,000 gallons) of water is used. China's coal conversion program is currently consuming more than 5 billion cubic meters (1.3 trillion gallons) of water annually, according to engineers, and will continue to expand.

Lastly, the increasing level of technology and sophistication of China's power plants are requiring a higher quality fuel. More coal than ever before, as a result, is being washed with water to remove impurities.



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Wu Ying—the senior engineer at Beijing Huayu Engineering Company, which supplies the industry with technical advice—told Circle of Blue that 55 percent of all coal is now washed, up from 30 percent a decade ago. Washing coal takes 0.11 to 0.15 cubic meters (30 to 40 gallons) of water per metric ton of coal, or 178 million to 238 million cubic meters (47 billion to 63 billion gallons) of water annually.

Wu and other authorities say China is intent on providing energy with its own domestic supplies, which is why China is counting on ever-increasing coal production from the dry north.

Last week, Chinese officials bolstered that point when they announced that the provincial government of Inner Mongolia is following the trend already set by Shanxi Province, the country's second-largest coal producer. Inner Mongolia will, over the next three years, shift the scale of mining operations from many smaller mines to a small number of large mines. Inner Mongolia counts 353 mines currently. That number could be reduced to 20 large-scale coal mining companies by 2013.

Experts said the restructuring would benefit the regional coal industry because the larger companies will be more efficient in using financial and water resources. Additionally, the Inner Mongolia government said that a number of the new and larger coal companies will have the capacity to produce more than 100 million metric tons annually, which makes access to water essential to the government's plan.

In Xi'an, geographer Huo Youguang considered these new coal production trends in laying out the case for the Bohai Pipeline, which he argues is essential to China's modernization. Huo said he is working with a desalination company and the Xilinhot government on a feasibility study for just the first 600-kilometer section.

"The project is technically feasible and necessary," Huo told Circle of Blue. "I've thought about China's water problems for a long time; building this pipeline solves that problem for this century."

"Bohai Sea Pipeline Could Open China's Northern Coal Fields", 05/04/2012, online at:

http://www.circleofblue.org/waternews/2011/world/desalinating-the-bohai-sea-transcontinental-pipeline-could-openchinas-northern-coal-fields/?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=0b5ca8a07a-RSS_EMAIL_CAMPAIGN&utm_medium=email

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Cambodia Warns Laos Over Mekong Dam

Cambodia has threatened to haul Laos into an international court if it allows a Thai company to push ahead with construction of the Xayaburi dam on the Mekong River without any regional consensus.

The warning came two days after Thai firm Ch. Karnchang signed a U.S. \$1.7 billion dollar contract to go full steam ahead with the hydropower project in northern Laos even though governments in the region have not cleared the dam's construction, also opposed by green groups.

Sin Niny, permanent vice-chairman of Cambodia's National Mekong Committee, urged Laos to abide by regional agreements made under the auspices of the Mekong River Commission (MRC), an intergovernmental body of four countries that share the river.

Cambodia, Laos, Thailand, and Vietnam had agreed in principle at a previous summit in December that further studies on the impact of the dam—which would be the first mainstream dam on the Lower Mekong—were needed before it could be built.

"There must be a discussion before Laos can proceed with the construction. If Laos has decided unilaterally, then according to law, we can file a complaint to an international court," he told RFA Thursday.

He did not cite any courts, but disputes of such nature are usually handled by the International Court of Justice in The Hague, the primary judicial organ of the United Nations.

Sin Niny said the committee would wait until after the MRC's upcoming summit in Japan before making any decision.

Tokyo summit

Leaders from the four countries will take part in the talks in Tokyo on Friday and Saturday and are expected to map out a new cooperation plan for management of the river resources through 2015.

Ch. Karnchang signed the agreement with Xayaburi Power Co. on Tuesday, saying construction would begin on March 15 next year even though preliminary construction in the area, including work on access roads and the relocation of villages, has already begun without the blessings of the regional leadership.

Lao officials contacted by RFA on Thursday refused to comment on the contract or construction.



Ch. Karnchang representatives also refused to provide other details on the construction of the dam before its shareholders' meeting scheduled for April 24.

The 1,260-megawatt dam would provide 95 percent of its electricity to Thailand.

Sin Niny added that the recent news about the dam's construction did not surprise him, saying that both Thailand and Laos were eager to go ahead with the project for mutual benefit.

"It is about interest. The company that is building the dam is Thai, and when the construction is finished they will sell the electricity to Thailand, so both Thailand and Laos will benefit from the project," he said.

Protests

Activists in Thailand, including an environmental group with representatives from riparian communities in eight northeastern provinces in the country, have opposed the dam and said they will stage a protest in Bangkok next week.

Meach Mean, coordinator for the Cambodian NGO Mekong Conservation, accused Laos of violating the MRC's agreement that Lao would suspend the construction until further studies are conducted.

He added that millions of people in the region rely on the river for their livelihoods.

"The dam will seriously affect countries downstream on the Mekong. It would affect the water flow," he said.

The Mekong River, Southeast Asia's main artery, flows through China, Tibet, Burma, Laos, Thailand, Cambodia, and Vietnam.

The Xayaburi dam would be the first mainstream dam on the Lower Mekong, aside from five already built on the Upper Mekong in China.

Laos, which has planned over 70 dams on its rivers, has said it hopes to become the "battery" of Southeast Asia.

"Cambodia Warns Laos Over Mekong Dam", 19/04/2012, online at: <u>http://www.rfa.org/english/news/cambodia/dam-04192012143244.html</u>

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Dewa defers power plant project

Managing director says a review of plans has been conducted to meet future demands

Dubai The Dubai Electricity and Water Authority (Dewa) has deferred its \$1.3 billion (Dh4.7 billion) Hassyan power plant project until further notice, Saeed Al Tayer, chief executive and managing director, told *Gulf News*.

"As a result of Dewa's achievements in the field of raising power-production capacity and improving demand conservation, by increasing power reserves to meet increasing demand due to the economic development of Dubai, the Hassyan Power Plant Project can be deferred until a later date, thus deferring capital and operational expenditures," Al Tayer said.

The Hassyan 1 IPP (independent power producer) was to have a capacity of 1,600 megawatts with 51 per cent owned by Dewa and 49 per cent by the winning party.

The plant was to form part of the Hassyan power generation complex near Abu Dhabi and use natural gas for fuel. It was due to be commissioned in 2014.

Dewa earlier announced plans to build a large power and desalination complex at Hassyan comprising six plants in all boasting a total capacity of up to 9,000MW and 720 million gallons per day of desalinated water.

Power demand

While 18 consortiums had applied for the project, four made the final shortlist for bidding.

Al Tayer said Dewa conducted a comprehensive review of its plans to deliver all future demands for power and water.

"These plans are in alignment with the Dubai Strategic Plan and the Dubai Integrated Energy Strategy 2030 formed by the Supreme Council of Energy, and in accordance with Dewa's Strategic Plan to provide these supplies [with] efficiency, reliability and safety, while protecting the environment [and] sustaining natural resources.

"In 2011, Dewa succeeded in reducing power demand growth considerably to only three per cent net consumption growth, down from the six per cent expected gross consumption growth, despite a simultaneous five per cent growth in registered combined electricity and water accounts.

This was achieved due to the deployment of best practices in power demand management, using the latest technologies, and implementing a slab tariff to encourage consumption conservation as a major means of reducing waste."

Dewa also succeeded in reducing the percentage line losses in its electrical network to 3.49 per cent in 2011, down from 6.28 per cent in 2001, he said.



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"Among numerous benefits, the line loss reduction will reduce the requirement for building new power plants. These energy savings will partially offset existing demand."

"Dewa defers power plant project", 20/04/2012, online at: <u>http://gulfnews.com/business/general/dewa-defers-power-plant-project-1.1011030?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=052973838d-RSS_EMAIL_CAMPAIGN&utm_medium=email</u>

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Development drive sees ethnic groups displaced by land grabs

As Myanmar's opening economy is celebrated, rights activists warn it will see people who have lived in areas for generations forced out under 'legal' means that merely cover mercenary greed

At the ramshackle Ei Tu Hta camp more than 4,000 displaced people fear not just the Myanmar military downstream on the Salween River, but also a constitution that will "legally" dispossess them of the land they were forced to flee.

'We hear rumours that our land and farms have been sold and in some cases even sold again," said camp leader Saw Nya Ter, who was a rice farmer before he was displaced in 2006. He said the military had built a road from Kler La to Khaw Thay Deu to Buhsa Kee over destroyed betel nut plantations.

"To walk the length of the destroyed land would take two days," he said. "The army paid nothing, didn't even discuss it. They just destroyed the plantations and built the road."

Saw Nya Ter says that most people in the camp do not have the identity cards issued by the Myanmar government or proof that they owned their land. Before the 2006 offensive he grew paddy rice, vegetables and beans on 3.2 hectares of land which has now turned back to jungle.

"Some may have had them in the past, but nobody around here now has papers. People can't go back until they are guaranteed security and access to their farms."

Based on past experience, Saw Nya Ter believes it is too early to say if the current ceasefire with the Myanmar army will last.

"We have 4,124 reasons here why we don't trust ceasefires; we have to have guarantees before we can go home."

Saw Nya Ter says the government has two weapons _ the constitution and the army _ to get people off their land.

Chapter One, clause 25(a) of the constitution, spells out what Saw Nya Ter says people are scared of.

"The state is the ultimate owner of all the land, and natural resources above and below the ground, above and beneath the water and in the atmosphere within its territorial boundary," Saw Nya Ter said, quoting the clause.

"They beat us in law and if that doesn't work they burn us off our land. Villagers look around and say how can we have a ceasefire when there are now many more soldiers in our land. If they want a ceasefire, they should leave our land and return to the army camps."



Saw Nya Ter believes one of the main objectives of the offensive was to drive people off land where they had grown rice, fruits and nuts. "The Burmese [Myanmar] army destroyed many farms, thousands of acres of rice and plantations all gone _ what a waste."

Saw Nya Ter estimates that the majority of people living in Ei Tu Hta refugee camp owned land and says many camp residents are worried about their legal status in relationship to the ownership of their land.

GO WITH THE FLOW

The Salween, at 2,812km, is Southeast Asia's longest free-flowing river. It is the last of the great rivers not yet dammed, but environmentalists and villagers living along its banks fear this will end. The Karen National Union, although opposed to damming the Salween, caved in to pressure from the Electricity Generating Authority of Thailand (Egat) and China's Sinohydro Corporation to allow a survey of the proposed Hatgyi dam site.

The Salween runs down from China through Myanmar and separates Thailand's Mae Hong Son province from Myanmar's Karen State. But it is much more than the vast stretch of the Salween's coffee-coloured waters that separates the two countries.

The trading hamlet of Mae Sam Lab, on the Thai side of the Salween, is bustling. The small shops that line the dead-end concrete road are stocked with engine spare parts, packaged consumer goods, iced beer and soft drinks, dried and fresh fish, large iceboxes and oil and petrol. A line of new, green-tiled, concrete picnic shelters dot the Thai riverbank.

Porters over-laden with goods stumble their way through truck-sized boulders and sand dunes to rows of waiting, smoke-belching cargo boats.

The contrast on the opposite side of the river is stark _ a cluster of makeshift wooden and bamboo buildings on a bare dirt hill denotes the presence of a Myanmar army camp. There are no roads, electricity pylons or shops _ soldiers from the camp hitch a ride to the Thai side for goods, drink and simple meals from street stalls.

Further north, another two ramshackle Myanmar army camps are located back from the water's edge. Bamboo poles, tied together, make a frame to dry washing on. A line of bobbing plastic bottles indicates fish traps. After an hour and half of river travel a large sandy beach is a sign Ei Tu Hta camp is reached. A 30m high sand dune conceals the 700 small bamboo huts of the camp from the river traffic.

FIRST THEY TAKE OUR LAND

There are signs Myanmar's authoritarian government is creeping its way towards change. To date it has released hundreds, but not all political prisoners, eased censorship and lifted some restrictions on the media, amended electoral laws to allow Aung San Suu Kyi and her National League for Democracy to contest and win parliamentary seats and started ceasefire talks with most of the country's armed ethnic groups.



In exchange for doing this the Myanmar government is confident Western governments will remove international sanctions and investment dollars will begin to flow into the country.

But not all regional politicians agree lifting sanctions is a valid solution. The Asean Inter-Parliamentary Myanmar Caucus (AIPMC) welcomes signs of the country's political reforms, but warned that removing sanctions could threaten the reform process.

"Myanmar lacks the laws and infrastructure to cope with the consequences of an influx of foreign investment. The negative experience of sizeable investment from China and other neighbours in Myanmar over recent years testifies to the social, environment, political and economic impacts that come with foreign investment and large-scale development projects," said Eva Kusuma Sundari, Indonesian MP and president of AIPMC.

"History has shown, independent corporations cannot be trusted to act in the interests of the people of the countries they are investing in; they must be regulated by both local and international laws."

Warnings from the Asean MP on unregulated investment concern environmentalists and activists who say the military build-up in ethnic areas is a strategy to provide security for dams, oil pipes, gas terminals and the construction of infrastructure needed to service development projects.

A report released in March by Arakan Oil Watch, "Burma's Resource Curse", points out that "projects that extract and export natural resources, have directly led to human rights abuses such as forced labour, land confiscation, displacement, sexual violence as well as destroying the environment."

Arakan Oil Watch goes a step further and accuses the government of misappropriating revenue from the extraction and sale of natural resources for the enrichment of government and senior military officers.

Jockai, a director of Arakan Oil Watch, told Spectrum: "The country's major businesses are controlled by military companies and cronies. Natural gas exports in 2013 are expected to generate an estimated US\$4.1 billion [127 billion baht] a year. Nobody knows, except the high-ranking officials, where this money is kept or goes."

Arakan Oil Watch's report blames the lack of transparency around Myanmar's development projects for the country's notorious reputation for corruption.

"The secrecy and lack of accountability mechanisms around oil and gas revenues provides a perfect enabling environment for corruption."

Jockai explains the sleight of hand used to "bury" investment money. Gas revenues in Myanmar are "recorded at the official exchange rate of six kyat to the US dollar _ the market exchange rate ranged between 800 to 1,000 kyat. This leaves billions of dollars unaccounted and kept out of the country's public accounts by the government. These funds are definitely not being used to build roads, hospitals or pay farmers compensation for their land _ the country or the people are not benefiting."



Jockai says in some cases compensation is paid by foreign investors for villagers' land taken for development: "Daewoo, the South Korean company paid above the market value for land they needed to build their gas terminals at Kyauk Phyn Township. The money was paid, but some villagers have had to pay at least half of it back to local officials. These people had no choice, they had to sell, even though the land had been in their families for more than a 100 years."

Jockai says land acquired by the China National Petroleum Corporation _ to build its oil terminal and seaport to take oil from tankers coming from Africa and the Middle East and pipe it to China _ was confiscated from villagers by the Myanmar government.

"Villagers were paid limited compensation _ authorities took most of the money that was paid. Many people are still waiting to be paid, but their land has already been confiscated."

'IT'S A LAND GRAB

'Arakan Oil Watch is not alone in documenting the human rights abuses and land confiscations linked with development projects. A vast number of reports have been produced by Amnesty International, CorpWatch, the Karen Human Rights Group, EarthRights International, Thai Burma Border Consortium, International Human Rights Clinic at Harvard Law School and the New York based Human Rights Watch.

Amnesty International's Annual Report for 2011 confirmed that "the army committed human rights violations in connection with oil, gas, mining and hydropower development projects, including forced labour, killings, beatings and land confiscation".

The Amnesty International report also gave detail to some of the abuses.

"In late May and early June 2011, authorities began forcibly relocating several villages in Kachin state as part of the ongoing Ayerarwaddy Myitsone Dam project. The authorities confiscated land without compensation and forcibly displaced villagers in Rakhine state as construction of the Shwe gas and oil transport pipelines began.

"Battalions providing security for the Yadana, Yetagun and Kanbauk-Myaing Kalay natural gas pipelines in Tanintharyi Division and Karen state forced civilians to work on barracks, roads and miscellaneous projects, and committed at least two extrajudicial executions."

The Shan Women's Action Network in their report "Burma Army Tracks" note that the former military government confiscated around 1,620 hectares for the building of a railway between Mong Nai in the south and Kentung in the east of Shan State.

The Human Rights foundation of Monland documents "the confiscation of over 1,000 acres [405 hectares] of land on Kywe Thone Nyi Ma Island" from 240 rubber plantation owners for a naval training ground and that the Myanmar Navy surveyed an additional 1,200 hectares.



The Ta'ang Students and Youth Organisation estimates that in northern Shan State, government authorities confiscated 17,377 hectares. In Karen state villagers accuse the government's militia, the Border Guard Force, of confiscating 1,214 hectares.

The Thai Burma Border Consortium (TBBC) latest report, released in 2012, "Displacement and Poverty", says that despite some Myanmar government reforms, "militarisation continues to pose the greatest threat to human security in the southeastern states and regions, with more people forced to flee from their homes during the past year" than in the previous 10 years the TBBC has been documenting displacement.

The report estimates that "at least 112,000 people were forced to leave their homes during the past year" in southeast Myanmar.

But it is not only environmentalists and activists spotlighting the land grabs and abuses associated with Myanmar's development projects. In March, in a speech to the UN Human Rights Commissioner's Office, Tomas Ojea Quintana, the special rapporteur for Myanmar, spelt out his concerns over unfettered economic development, land confiscation and human rights abuses.

"Given the wave of privatisations last year and the expected increase in foreign investment, along with the new government's plans to accelerate economic development, I also fear an increase in land confiscations, development-induced displacement and other violations of economic, social and cultural rights."

Mr Quintana underlined the need for Myanmar's government to develop a legal system of international standard to protect citizens and the environment.

"The government should develop the necessary legislative framework, in line with international standards on corporate social and environmental responsibility, regulating the prevention of, protection against and reparation of the adverse impacts of activities by private and state-owned companies, mainly in the extractive and large-scale energy-related sectors."

THERE IS NO PROTECTION

Paul Sein Twe, a spokesperson for an alliance of grass-roots based organisations that operate as the Burma Environment Working Group (BEWG), insists Myanmar's investment laws and regulations governing development projects are ineffective and offer no legal protection to citizens.

"Land ownership is difficult, most of the villagers we surveyed had documentation from local organisations, not from the government _ their land tenure is based on these local documents. The majority of ethnic people don't have ID cards. It is crucial that the Karen National Union negotiate land titles in their peace talks, otherwise it will dissolve into a big mess. Many people who had documents lost them when they fled to the jungles.

"Companies want the cheapest option, and in a country without laws or mechanisms to control what companies can do or can't do the impact on communities and the environment will be irreversible. If there's development there's displacement. Corporate responsibility should mean that before starting a



project an environment impact assessment [EIA], a social impact assessment and a conflict impact assessment should also be carried out," said Paul Sein Twe.

He added that without evaluating the impact of large-scale development projects on communities or the environment there is a huge potential to reignite armed conflict.

"There is tension within the ethnic armed groups at the local level and at their head offices over the selling of resources. In Karen areas Malaysian companies want to establish palm oil plantations. They have government permission, but not from the KNU. Without proper consultation these projects have the potential to spark a conflict."

Paul Sein Twe shakes his head and says it is incredible that the Italian-Thai Development Company, the Thai company constructing the deep sea port and industrial park at Dawei on the Andaman Sea, only agreed that they would carry out an EIA when the Karen National Union demanded one. He believes there is a strong case for having all mega-developments shelved until there is a legal framework to deal with all related issues _ land rights, environment, pollution, compensation and complaints.

"We call on the ethnic armed groups, the government and the business community to freeze developments until the ceasefires are negotiated and there's rule of law in the country to protect both people and the environment. Now there is no rule of law or mechanism to address the grievances of the people."

Paul Sein Twe says the government and regional investors regard refugees and displaced people as future sources of cheap labour for the planned economic zones. He says the government is sending out the wrong signals that will attract unethical investors.

"It's all designed to be attractive to foreign investors. Economic zones, eight-year tax free incentives, the East-West Corridor linking eastern Burma, China and Thailand. It will also sideline the ethnic armed groups _ they will not be able to resist the pressure or operate freely," said Paul Sein Twe, adding that development projects have already robbed thousands of villagers of their farms and land to unscrupulous government authorities and there is little villagers can do without legal protection.

"The huge mega developments _ dams, deep sea ports, hydropower dams, mining, deep sea drilling, logging and construction of the infrastructure needed for transport _ are being done without a legal framework in place. There's no pressure or any basic requirements for developers to carry out EIAs or social assessments. We know from many previous examples that environmental disasters do happen _ oil leaks, logging, mining pollution _ and we know from experience around the world that companies are often not so good at self-regulation."

MOTHER'S PLEA: AFTER A LIFE OF RUNNING, WE WANT OUR HOMES

Htee Ler Baw Hta sits on the bamboo floor of one of the 700 small huts of the refugee camp and says she has been running from the Myanmar army for 37 of her 49 years.



"I was only 12 when I started running. I remember I was in school the first time I had to run. One year later we ran again. I've run so many times I cannot count," Htee Ler Baw Hta says without fuss.

She puts on a brave face and manages to fix dinner and trim her daughter's nails as she tells of the losses she and her family have had to endure because of the constant running from the Myanmar army soldiers in the harsh jungle and on the mountains of Karen state.

"In 1998 I was pregnant with my daughter, we were running and hiding in the jungle. I had to stop. I just couldn't keep walking, I couldn't keep up with the others. Soldiers were on two sides.

My water broke. The others had to keep going, but my brother-in-law and an old lady stayed to help me give birth."

Htee Ler Baw Hta says the nights were cold and without blankets or fire it was a tough place to be pregnant. She gave birth in the open jungle without bed, floor mat or shelter.

"I silently cried and cried. We couldn't use torches or light fires. After the birth I needed hot water to wash, but we dared not start a fire, the soldiers would see it. It was January, the cold season, and the water from the stream was freezing."

The last time Htee Ler Baw Hta had to run from the Myanmar army was in 2006, and it came on the back of a ceasefire agreement the Karen had made with the former military regime.

"I now had five kids, and travelling with them was difficult. We could only walk at night. Most of the time we couldn't cook and when we could we had do it before dawn. We had little food with us and had to rely on what we could scavenge on the way. We left on Sept 28 and arrived at Ei Tu Hta 10 days later."

Htee Ler Baw Hta gently rubs the arms of her youngest child and says she was born in Ei Tu Hta.

"We had a ceasefire in 2004 and 2005, but still we had to run. I don't know if it will be any different now, but I hope this time it works. I want to go home. I've had enough of living like this. I want to go back to where I was born."

Htee Ler Baw Hta's memories of running from the Myanmar army are spiked with good humour until she starts to talk about her children. She wants justice as a part of any peace deal.

"I can't forgive the Burma army. I lost my son because of living like this. He had a fever and diarrhoea. I want the Burma army to face up to what they did to us. I want them brought to law. We lost everything, our homes, our land and our education because of them. Our children have nothing living like this."

In spite of ceasefire agreements, Htee Ler Baw Hta says she and her children are prepared to run.

"Even now the Burma army is just an hour's walk from here. We always have three days worth of food prepared. We've built bunkers under our houses, I don't want my children hurt."


To add proof to her words, Htee Ler Baw Hta, insists I look and photograph the bunker under the house, covered with bamboo and dirt. A gaggle of children fight to get inside to show how it works.

Back inside her bamboo house, the dry season heat is stifling. Htee Ler Baw Hta waves a square of laminated paper in a wasted effort to generate coolness.

There's no electricity in the camp, no fridge, no ice, no fans and no television. Food and drinking water are cooked or boiled in pots sat on a charcoal-burning brazier.

The pain of talking about the death of her son causes Htee Ler Baw Hta to cry. She swipes at the tears tracking through dry tanaka powder on her face.

"If this ceasefire breaks like the last one, I don't know what to do.We can't keep living like this. My concern is for my children. I want them to have an education. I want them to study in a safe place, not having the constant worry of having to think about running."

Htee Ler Baw Hta, like all the people interviewed for this story agree that they want peace, they want to go home, but are worried about their status as citizens and worried about what has happened to their land and plantations.

"How can we feel safe to go back. They've burnt us from our land. The first sign of goodwill would be for the government to withdraw their soldiers from our land."

A FATHER'S NIGHTMARE

Doo K' Pru, 42, came to Ei Tu Hta in 2006 after the Myanmar army attacked his village, Nya Mu Khee. He had five children. One son, aged three at the time, died in 2007 from malaria he caught living in the camp.

"It was one year after we arrived. The 10 day journey was bad for the children. We could only travel at night. It was tough, climbing mountains, the kids were sick, hungry and tired.

"Almost the whole village ran. I was a rice farmer. During the last ceasefire the Burma army brought in more soldiers to our area.

"In December [2011] I returned to my farm. We had no problems when we were there. But there was an army camp on the top of the mountain and we heard other villagers living close by had been taken as forced labour and ordered to give food to the soldiers. The army is building a road to truck in their supplies. I can't go back now there are many more soldiers there now. I prepared my fields, I thought I could do it, but I know now that I can't."

The latest Thai Burma Border Consortium report backs up Doo K' Pru's story. Its "surveys found that coercive military patrols, forced labour and forced displacement each disrupted the livelihoods of at least one in 10 households".



"Living here [Ei Tu Hta] and being a farmer with no land is hard. Land around the Burma army camp is free, but no one dares use it. Light Infantry Battalions 590 and 599 are there now. When I went back we risked landmines, we had no ID cards. We have no rights in Burma _ if we want to travel, even to our fields we need the army's permission. We travel to the fields without it, but if we get caught we have to porter or are fined and punished."

A villager interrupted Doo K' Pru's story to add a grim footnote about an Ei Tu Hta resident who returned to work his fields and was caught by the Myanmar army.

"He was ordered to do forced labour, he couldn't do it as he was unwell so they fined him. He couldn't pay the fine. He was so worried what the soldiers would do to him _ he hung himself."

Doo K' Pru says: "I went back because of the ceasefire, but there were more troops than before. That was it for me, I left. It's not worth going through it all again. If we get peace I will return, we can't live here forever."

'ONE IN FIVE CHILDREN WILL DIE'

Naw Delay, a former teacher and mother of six children, now works as a volunteer with the Karen Women's Orgnisation in the camp.

Naw Delay says she and her family came to Ei Tu Hta in 2007 from her village of Saw Mu Plan after the Myanmar army attacked it.

"Many villagers were killed _ we decided it was too dangerous to stay, so we ran. It took us one week to get here _ we had to avoid the many army patrols on the way here."

Naw Delay's trek to Ei Tu Hta involved avoiding landmines, crossing flood-swollen rivers and existing on what they could find to eat on the way.

"Villagers carried only what they could carry. We farmed 12 acres [4.9 hectares]. We had 20 buffalo. The Burma army gathered them in a field and slaughtered them, not for food, they just killed them. We dare not go back now."

Naw Delay's pain is etched on her face and she says as a woman caught in conflict, hers has been a difficult life.

"My kid was sick when we lived in the jungle. He died on May 16, 2006. It's easy for me to remember. He had fever. We had no way to know what was wrong. We had no medicine. I nursed him for three days, then he died. I will never know what killed him."

According to a health report, "Chronic Emergency", by the Backpack Health Workers Team, the situation in eastern Burma is dire _ one in five children will die before their fifth birthday, and one in 12 women will lose their lives from complications of pregnancy and childbirth.



WATER RESEARCH PROGRAMME -Weekly Bulletin-

Naw Delay says the human potential that has been wasted in Myanmar is a shame.

"As a teacher it is hard to see so many Karen children not getting an education that a secure and stable life could give them. I'm upset to see schoolchildren with no materials, no reading books, no exercise books and no pens or pencils. It's worse for the people [displaced] inside _ they have no teachers."

"Development drive sees ethnic groups displaced by land grabs",22/04/2012, online at: <u>http://www.bangkokpost.com/news/investigation/289867/development-drive-sees-ethnic-groups-displaced-by-land-grabs</u>

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* Ms Fang's parched patch

FANG HAIXIN, a subsistence farmer near the village of Huopu in western Guizhou province, never used to fret about not having enough water. True, there was the odd dry year. But rainfall was usually abundant, and harvests adequate. Yet like many in south-west China over the past three years, Ms Fang has learnt to grapple with the sort of drought conditions that, until now, were more commonly a feature of China's dry northern plains.

Accustomed to finding water close to the surface, Ms Fang and her neighbours now have to dig wells 30 metres (100 feet) deep. Potato yields on her small hilltop plot, she says, are down by two-thirds. Corn harvests are somewhat better, but also down sharply.

In the past year alone, say officials, levels in nine lakes on the Yunnan-Guizhou plateau have dropped by 70cm, marking a total loss of 300m cubic metres of water. The regional drought is now in its third year, and in that time 270-odd rivers and 410 small reservoirs have dried up in Yunnan alone. Residents at lower elevations are better able to tap into groundwater, and have so far been able to carry on as before. Indeed, just 10km downhill from Ms Fang struggling with her potato crop, this correspondent stopped at a car wash and was assured by a man with a gushing hose that water supply was not a problem.

Even so, not only hilltop farmers are affected. Residents in Yunnan's capital, Kunming, suffer periodic stoppages in supplies of tap water. West of the city, dry conditions are causing forest fires. The region's growers of such valuable crops as tea and medicinal herbs have suffered, causing prices of those commodities to soar. Hydropower production has also fallen with water levels. Officials report that last year nationwide output rose by 9% year-on-year, but in the southern provinces of Yunnan, Guizhou, Guangdong, Guangxi and Hainan drought caused a 47% fall in reserve power capacity.

The repercussions threaten to affect an ambitious central-government project, imperial in scale, to transfer vast amounts of water from the south to the parched north of the country. China has already invested 137 billion yuan (\$22 billion) in what it calls the South-North Water Diversion Project, and is set to invest another 64 billion yuan this year. The idea is to pump water from the Yangzi river northward through pipes and canals along three separate routes. Priority is given to the eastern route, which by 2014 is expected to bring 1 billion cubic metres of water a year to Beijing—a quarter of the capital's annual supply.

From its inception, the vast scheme has suffered both delays and criticism. One concern has been the cost, both of the initial construction and of the expense of pumping so much water over such distances. The project has also required that at least 330,000 residents along its course accept being relocated.

The river systems of Yunnan and Guizhou figure only modestly in the planned supply chain of the South-North Water Diversion Project. But if the causes of the drought in these provinces have to do



with changing global climate patterns, the main assumption underlying the project—that of permanent water abundance in the south—may not hold up.

Liu Xiaokang of the Yunnan Green Environment Development Foundation, an NGO in Kunming, believes the causes are mixed. Global climate may be affecting patterns of precipitation, he says. But his group also notes that the parts of Yunnan that are hardest hit are those where development has been fastest and deforestation most extensive.

Marco Gemmer of China's National Climate Centre says droughts across southern China are linked to changing patterns in other parts of the world, such as anomalies in the Arctic oscillation or in the ocean current La Niña. Short-term droughts have occurred in the region for all of recorded history, but they may now occur with far greater frequency.

His colleague, Professor Jiang Tong, warns of problems with the transfer project if both south and north suffer drought at the same time. The situation, he adds, is complicated by the Yangzi's Three Gorges dam. It provides massive amounts of hydroelectricity to the Yangzi basin. He is concerned about what will happen should Shanghai need more power at the same time that Beijing needs more water.

On her hilltop plot, Ms Fang has a different view. "The government says they will help. But I don't know what they can do if it doesn't rain."

"Ms Fang's parched patch", 14/04/2012, online at:

http://www.economist.com/node/21552583?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=02a b766235-RSS_EMAIL_CAMPAIGN&utm_medium=email

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Scientists call for more transparency in proposed Murray-Darling Basic Plan

The volume of water needed to secure the long-term sustainability of the Murray-Darling river system cannot be identified clearly due to a lack of transparency in the proposed <u>Murray-Darling Basin Plan</u>, more than 60 Australian scientists say in a special joint statement.

The proposed plan's aim to return 2750 GL a year to the environment would be of enormous value but falls short of meeting all the targets identified as needing to be met to protect key natural assets and ecosystem functions, the statement says.

Those targets need to be better defined and would be met, increasingly, by returning greater volumes of water, it notes. Yet the proposed plan gives too little detail on what those volumes might be, what they might achieve and why they cannot be achieved: "Indeed, it is not clear why the proposed Basin Plan should not meet all targets, in keeping with the <u>Water Act 2007</u>."

The proposed plan has a serious shortcoming in that it is based solely on historical data and fails to take into account future climatic changes, despite "unequivocal evidence that global temperatures are rising", which will lead to corresponding changes in rainfall, evaporation and stream run-off patterns, it says.

It also takes insufficient account of likely increasing groundwater extraction in the future, possibly as much as 2600 GL a year: "Groundwater and surface-water resources should be managed together, given that groundwater often underpins surface water flows."

Public consultation on the proposed Basin Plan, published late last year, closes on Monday 16 April. The scientists acknowledge the significant challenges for the federal government in implementation.

But they argue that, unless these and other key issues are addressed, the current volume of water proposed for return to the river system may not be enough to meet many of the environmental targets identified in modelling by the <u>Murray-Darling Basin Authority</u> (MDBA) and state agencies.

"This is really the centrepiece of the Murray-Darling Basin Plan and, unfortunately, there is a general lack of transparency about what other volumes of water might or might not achieve," says spokesman Professor Richard Kingsford, Director of the <u>Australian Wetlands and Rivers Centre</u> (AWRC) at the <u>University of New South Wales</u>. "This is one of Australia's most important environmental and economic initiatives; we owe it to our future generations to get it right.

"Greater access to groundwater resources is of particular concern. We simply don't know enough about it to rule out the potential danger of dipping into the very flows that provide base flows for the rivers. It could be a classic example of robbing Peter to pay Paul.

"This is not simply about restoring the environment but also the economies of the Murray-Darling Basin that deliver benefits measured in the billions of dollars, as recently demonstrated by a study by the <u>CSIRO</u>."



WATER RESEARCH PROGRAMME -Weekly Bulletin-

The persistent neglect of the magnitude of impacts of climate change on river flows is a serious flaw, says Professor Ann Henderson-Sellers of <u>Macquarie University</u>: "As temperatures rise, there is more evaporation from the catchment and this means that the environment will have to shoulder most of the burden of future reductions in flows."

The scientists reiterate their support for a Basin Plan as the means of coordinating management and further emphasise that current floods have not solved the long-term problem for the Basin. They also identify the need for identifying constraints, local management and a focus on other threats.

"Scientists call for more transparency in proposed Murray-Darling Basic Plan", 13/04/2012, online at:

http://www.sustainabilitymatters.net.au/news/52468-Scientists-call-for-more-transparency-in-proposed-Murray-Darling-

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Halving environmental footprint of our products is our target: Unilever COO Harish Manwani

JEDDAH: The Kingdom faces severe water scarcity and therefore, the prudent use of this scarce resource is of utmost importance. In line with the Unilever Sustainable Living Plan, Unilever has entered into a partnership with the National Water Company (NWC) with the objective of driving behavioral change among consumers by educating them on water conservation. "Our aim is to reach 25 percent of all Saudi households via this campaign," says Harish Manwani, chief operating officer of Unilever, in an exclusive interview with Arab News.

In fact, Saudi Arabia is one of the key markets for Unilever across the MENA region, while Unilever KSA is one of its most successful businesses delivering sustained and profitable growth. "We have a long and successful history in the Saudi market and I would attribute this to our wide and well-balanced portfolio, a steady stream of innovations and more importantly a highly talented and motivated team," Manwani added. "Our portfolio, which is spread across different price and benefit segments, ensures that we have a product to satisfy every consumer. Additionally we keep innovating on a regular basis by bringing new products to delight the Saudi consumer," said Manwani who has attended the Advanced Management Program at Harvard Business School. He joined Hindustan Lever (HLL) in 1976, becoming a member of the HLL board in 1995 as director responsible for the Personal Products business. As category leader for Personal Products, he also held regional responsibility for the Central Asia and Middle East business group. He was appointed chief operating officer of Unilever on Sept. 1, 2011 and he is based in Singapore.

Excerpts:

Unilever has introduced a new approach to doing business called the Unilever Sustainable Living Plan. Can you outline the specifics of this program?

Unilever has an ambitious plan. We aim to double our size while reducing our environmental impact. In today's business environment, growth at any cost is no longer viable as the world is consuming natural resources at a rate faster than the planet's capacity to replenish them. We are committed to an "and-and" agenda of growing our business while reducing our environmental impact. Our Unilever Sustainable Living Plan sets out a more sustainable way of doing business by committing to three main ambitions: Halving the environmental footprint of our products, helping more than one billion people take action to improve their health and well-being and sourcing 100 percent of our agricultural raw materials sustainable/in a sustainable manner

Unilever is ambitious to double the size of its business. How will you achieve this without any additional environmental impact?

Our ambition is to decouple our growth from the environmental impact across the lifecycle of our products by developing new ways of doing business. In our own operations we aim to achieve an absolute reduction in greenhouse gases, water use and waste. However, our target to halve the environmental footprint goes much further than our manufacturing operations. It covers the full value chain from sourcing through to consumer use and disposal. We will also achieve our plan by motivating and enabling consumers by providing them with products that are equally effective but



require lesser energy or reduce the consumption of scarce resources like water, in their manufacture or use. If you look at the GCC market, we have launched 'Comfort Essence' - a concentrated fabric conditioner. This product has allowed us to significantly reduce the amount of polymer which is used in its packaging which results in a reduction of transportation and storage costs - this makes it good for business and good for sustainability.

Unilever claims that Unilever brands are used two billion times a day globally. How do Unilever's products make a difference to the quality of people's everyday lives?

At the heart of Unilever's vision is our philosophy of working to create a better future for our consumers everyday, by helping people around the world meet their daily needs for nutrition, hygiene and wellbeing. We have a vast portfolio of home care, personal care, food and refreshment brands and we believe in the ability of our products to help people take positive action in improving their health and wellbeing. A great example is Lifebuoy, which as the world's leading health soap provides accessible and affordable hygiene to many. The brand's social mission aims to bring safety, security and health to billions of people through the active promotion of washing hands with soap. Each year around 3.5 million children under the age of 5 die from diarrhea and acute respiratory infections such as pneumonia, and washing hands with soap has been found to be the single most effective way to prevent these diseases. Across the Middle East and North Africa, in 2010 alone, Lifebuoy's hand hygiene program reached 12.3 million children. Another brand that is bringing about a positive change is Signal, Unilever's leading oral care brand. Working in partnership with government bodies and dental authorities like the FDI, Signal has a long established history of promoting oral health awareness among school children in Saudi Arabia.

Under the USLP you have recently signed an agreement with the National Water Company in Saudi Arabia. Can you please explain what this initiative is and what you seek to achieve?

The Kingdom faces severe water scarcity. Using this scarce resource prudently is therefore a great priority for everyone. In line with the Unilever Sustainable Living Plan, Unilever has entered into a partnership with the National Water Company (NWC) with the objective of driving behavioral change among consumers by educating them on water conservation. Our aim is to reach 25 percent of all Saudi households via this campaign. Alongside educating children in schools, the program will also educate adults by distributing tips on water conservation and distributing water conservation toolkits during our door-to-door sampling activities. To harness the increased popularity of social media, we are integrating water conservation awareness messages into our digital platforms like Facebook and Twitter. Our ambition is to also engage our customers to partner with us in delivering this water conservation message to their shoppers and consumers.

How important is Unilever's business in the Middle East and the GCC market specifically?

The MENA region with its large and growing population of 350 million people, of which 50 percent are below the age of 25, presents Unilever with plenty of opportunities. Already, we have a very strong business in this region, with over 70 percent of our turnover coming from number one category positions. The opportunities coupled with the strength of our business make MENA a focus market for Unilever to invest in for growth. Our priority in MENA, however, is not only to grow competitively by increasing market share, but more importantly by helping to grow the overall



market - an activity that we refer to as market development. We envisage that 70 percent of our future growth in the region is going to come from market development as the penetration and consumption of the categories in which we operate provide us huge headroom for growth. Deodorants, for instance, provide us with a large growth opportunity that we can harness by generating awareness on personal hygiene.

What about your investment in the GCC region? Do you have any plans in the region?

Considering the importance of the GCC region for Unilever, we continue to invest in modernizing and expanding our manufacturing facilities and logistics infrastructure. More importantly we have been making significant investments in building our brands, expanding our distribution network and in developing the markets. Additionally, we have been investing in developing institutional capabilities and in grooming our local talent. Our focus and commitment to developing local talent is borne by the fact that Yasser Joharji, a Saudi national, is the managing director of our business here. As far as manufacturing facilities go, we have invested substantially in the expansion of our Binzagr Unilever factory located in Jeddah that manufactures Personal Care and Home Care products. Established in 1978, the factory has since undergone rapid expansion and modernization and is today a state-of-the-art manufacturing facility. In the last decade alone it has delivered a 150 percent increase in production volume. Today this factory is a large sourcing hub for the region meeting not only the requirements of all the GCC countries but also exporting to markets like South Africa, Morocco, Egypt, Tunisia, Pakistan, and Iraq among many other countries. With nine manufacturing sites and over 4,000 employees across the Middle East and North Africa we have a long-term commitment to the region and we will continue to invest in line with business requirements.

Did Unilever suffer any impact from the Arab Spring?

Like everyone else, the Arab Spring also impacted our business. But despite the turmoil across the region we have continued to grow. Take the case of Egypt: In the initial stages, our business did get affected, but subsequently we recovered and in 2011 our business continued to grow in double-digits. This, in many ways reflects our inherent strengths, the resilience of our business and the immense amount of consumer loyalty our brands command.

Unilever's portfolio includes some of the world's best-known brands. Which brands are popular in the MENA region?

More than 70 percent of our turnover in the MENA region comes from categories in which we are number one players. Some of the best-known brands in our portfolio include Lipton, Lux, Dove, Comfort, Signal, Clear, Knorr, and Vaseline among many others. We are incredibly proud that almost all Saudi households use one or more of our products

Tell us a little about Unilever's business in Saudi Arabia.

Within the MENA region, Saudi Arabia is one of our key markets while Unilever KSA is one of our most successful businesses delivering sustained and profitable growth. We have a long and successful history in the Saudi market and I would attribute this to our wide and well-balanced portfolio, a steady stream of innovations and more importantly a highly talented and motivated team.



Our portfolio, which is spread across different price and benefit segments, ensures that we have a product to satisfy every consumer and additionally, we keep innovating on a regular basis by bringing new products to delight the Saudi consumers. In the recent past we have successfully introduced Clear shampoo, Pond's Anti-aging cream, Pyramid Teabags, Signal Sensitive, Close Up whitening, Vaseline's men range and more recently the Vaseline 2-in-1 range.

What is the purpose of your visit to Saudi Arabia?

Visits such as these allow me get a first hand glimpse of the local market by meeting our consumers and customers, finding out what they think about us and how we can serve them better. It is also an opportunity for me to review the business with the local leadership team and more importantly meet our young and promising talent in the business. My visits also give me the opportunity to meet with members of the Binzagr family who are our valued partners. With the Binzagrs, we have a great relationship that dates back to the 1930's and has stood the test of time.

Please tell us something about your long journey with Unilever and what made you stay with the company for over three decades?

I have enjoyed working with Unilever for over three decades in many parts of the world. The philosophy of the company is based on 'doing well by doing good' and I have always felt that Unilever's values have matched my own. The company has a true culture of diversity and meritocracy, providing room for employees from across the world to experiment and innovate, and yet be strongly bonded by shared values. I find this very inspiring. It is this powerful combination of performance culture and shared values that have enabled me and thousands of others to build rewarding careers in Unilever.

"Halving environmental footprint of our products is our target: Unilever COO Harish Manwani", KHALIL HANWARE, 16/04/2012, online at: <u>http://arabnews.com/economy/article613187.ece</u>

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THE MUCH ANTICIPATED 6TH GLOBAL WATER SUMMIT IS FAST APPROACHING, by KATHY SHANDLING (MaximsNewsNetwork)

UNITED NATIONS - /<u>MaximsNews Network</u> / 16 April 2012 - With the arrival of the month of April, the days are becoming longer and warmer in the Northern Hemisphere. More importantly, within the world of the water infrastructure finance and development arena, it marks the start of the Spring conference season around the world.

And one notable conference will commence at the end of April in Rome, Italy. Now in its 6th year, the *Global Water Summit* has become recognized as a "sell out" must attend conference program.

Produced by the team that brings the water industry's well regarded publication "Global Water Intelligence", and in partnership with the International Desalination Association, the *Global Water Summit* is a truly a unique event – one of a kind. As in previous years, the upcoming 6th *Global Water Summit* will bring together a tremendous notable collection of key leaders and participants from the international water community.

As in past years, the multi-day conference event will be split into three different formats: keynote sessions, themed break-out stands, and round table discussions. This year, new formats and technologies will place even more emphasis on interactivity, spontaneity and creative thinking, including an additional session of the hugely popular round table networking segment.

Entitled "Brave New World," the themes of the 6th Global Water Summit include:

- Can a keynote panel of leading experts reverse-engineer the perfect water future?
- What do the events in North Africa and the Middle East mean for countries which have such a precarious and vital relationship with water?
- How will the European debt crisis and the continuing rise of Asia impact new water infrastructure?
- What is going on away from worldwide events? Which water professionals are quietly achieving something brilliant, something that will bring new insights to the way you work?
- What can we learn from inspirational utilities around the globe?
- What is the future for desalination and water reuse?
- What are the new directions in quantifying risk for industrial water users?

Notable keynote presenters include the following distinguished individuals: John Lipsky, a former Managing Director of the International Monetary Fund (IMF); Dr. Mahir Shah, the Head of Water Resources for the Rural Development and Decentralized Governance Division of the Planning Commission for the Government of India; Frank Rijsberman, Director of the Water, Sanitation & Hygiene Program at the Gates



Foundation; Julia Bucknall, Director of the Water Anchor at the World Bank; and Shayo Holloway, Group Managing Director of the Lagos State Water Corporation.

Breakout panel sessions will specifically address timely topics such as: securing the water future of the Middle East; new proactive programs and practices being implemented by industry to better address water consumption and improved water efficiency; the future of desalination; water utility enhanced performance initiatives; and the evolving global role of water recycling/water reuse.

And the expanded roundtable networking program will include interactive discussions on the following region and country-specific themes: investment opportunities in the Philippines' water sector; water sector reforms in Malaysia; water sector development in Bahrain; wastewater treatment in Abu Dhabi; the water sector evolution in Australia; water and wastewater challenges in Pakistan; PPP's in Bangalore, India; new developments in the Mexican water sector; the Israeli water and wastewater sector; planning the UK's water future; the water market in Russia; new challenges in Central and Eastern Europe; and PPP opportunities in the Vietnamese water sector.

Other topic-specific themes that will be a part of the roundtable breakout discussions include: the energy-water nexus; wastewater as a resource; performance contracts and future of PPP's; minimizing the carbon footprint of desalination; an update on the World Bank and IFC initiatives within the water infrastructure sector; appropriate water solutions for liveable and sustainable cities; new directions in utility management; the water rights market; investing in water; merger and acquisitions trends in the water sector; assessing the real needs for infrastructure investment within the water sector; the future of fracking in the United States; the water supply challenges faced by a developing mega-city; lessons when it comes to water funding based on the US Revolving Fund model; and measuring risk in industrial water.

A highlight of the 6th World Water Summit will be the presentation of the Global Water Awards at the Gala Dinner. Sponsored by the Spanish-headquartered company Abengoa, the festive evening event will include remarks delivered by Craig Venter who is a leader when it comes to biotechnology and productivity. Mr. Venter is pioneering the development of synthetic organisms to address the challenges the world is facing. It is acknowledged that biology will enable the world to make the transition from an economy that is extraction-consumption-disposal based to a circular economy where all of the inputs are renewable, and all of the outputs are recyclable. There is clearly an overlap by this kind of mission with the global water sector in which reuse and recycling are both becoming critical.

The Global Water Awards will salute companies and agencies from across the world – companies that have made a major contribution within the water sector this past year. Award categories include: water company of the year; desalination company of the year; public water agency of the year; water technology company of the year; best



water deal; best water reuse project; best desalination plant; best industrial water project; and best water performance initiative.

It is important to note that corporate sponsors of this much anticipated conference event include Aqualia, Doosan, Acciona Aqua, CH2M Hill, Xylem, AECOM, Hyflux, Suez Environnement, Hitachi, Pentair, and Veolia Water Solutions & Technologies.

Additionally, there are a number of media partners such as British Water, Arab Water World, National Association of Water Companies (NAWC), International Private Water Association (IPWA), and the World Business Council for Sustainable Development (WBCSD).

"THE MUCH ANTICIPATED 6*TH GLOBAL WATER SUMMIT* IS FAST APPROACHING, by KATHY SHANDLING", (MaximsNewsNetwork), 16/04/2012, online at: http://www.maximsnews.com/news20120416GlobalWaterSummitShandling11204160801.htm

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* Water Bills To Rise As Supply Shrinks

* Water utilities' \$330 billion in debt likely to rise

* Water shortages to become more common, even in the East

By Tiziana Barghini

LAS VEGAS, April 19 (Reuters) - The Bellagio fountains, one of the most iconic of the Las Vegas water-based attractions, is said to contain 22 million gallons of water. It may look like a waste for a city in the middle of the Mojave desert, but for the moment there is no shortage of water in Nevada.

However, the abundance of water, in Las Vegas as elsewhere in the United States, is unlikely to last, according to a panel of experts at a forum of National Federation of Municipal Analysts held in the city, famous for its casinos.

Water rates will be slowly but constantly creeping up, and water utilities across the nation are likely to issue more debt to renew and expand their pipelines, analysts agreed.

The Southern Nevada Water Authority, which plans to issue a \$360 million bond in July to upgrade old facilities and build new ones, is a good example.

"We already raised tariffs twice, \$2 each year in 2010 and 2011 for residential customers," said William Fox, chief financial officer at the Las Vegas Valley Water District, adding that he does not anticipate further rate hikes until 2014.

Other utilities, which might have not yet done so, will have to follow suit.

"With federal and state assistance limited we believe utility managers will likely ask more of their customers, especially in the form of rate adjustments," a recent special report on water scarcity by Standard and Poor's predicted.

In general, well-managed water utilities are expected to tap funds in the coming months. S&P rates 1,270 revenue bonds in the sector and says its sector common rating is A+ with a generally stable outlook.

According to an analyst with MMD, a unit of Thomson Reuters, water utilities have outstanding debt of around \$330 billion, nearly 10 percent of the \$3.7 trillion municipal bond market. Issues in the sector have been around \$11 billion in the first quarter of 2012.



"Despite all the bond issuances of the past two years, we believe the sector still has infrastucture needs to fund in 2012 and beyond," the S&P report said.

No immediate pressure is seen as managers have shown great ability to control their rates, but long-term worries are starting to emerge, said Geoffrey Buswik, an analyst with S&P attending the forum on Wednesday.

Water shortages could become worse in the coming years.

"The U.S. is not immune to water shortages, and not just in the arid West," said Betsy Otto, director of Aqueduct, a project studying water issues.

"Parts of the Southeast and even New England have been concerned about meeting water demand during dry periods."

"This will only continue as populations and local economies put more strain on existing supplies, and as climate change brings more extreme weather patterns with the potential for more severe droughts," Otto said.

With public tap-water prices ranging from a low of \$3.73 per 1,000 gallons in Chicago to a high of \$23.42 in Atlanta, the cost of tap water has often been subsidized, another water expert said.

"We priced water at a highly subsidized level, because it was what people wanted and because it was necessary to settle the West in the first instance," said Grady Gammage of the Morrison Institute for Public Policy. "We still continue to price water at highly subsidized levels".

As much of this water goes to landscaping, its cost and scarcity are likely to soon become a political issue, Gammage predicted.

"Water Bills To Rise As Supply Shrinks", 19/04/2012, online at: <u>http://www.huffingtonpost.com/2012/04/20/water-bills-rising-supply-shrinks_n_1439257.html?ncid=edlinkusaolp00000003</u>

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***** Hydroelectric Power Seen Expanding 15% From Upgrading U.S. Dams

Overhauling dams built for flood control and irrigation may generate 12 gigawatts of electricity in the U.S. without <u>carbon emissions</u>, increasing water power capacity 15 percent, the Energy Department said in a report.

Agency researchers analyzed 54,391 of the more than 80,000 dams in the U.S. that now lack equipment to produce power, compared with 2,500 that generate electricity, according to the report released today by the agency.

Expanding hydroelectric capacity can "help diversify our energy mix, create jobs and reduce carbon pollution nationwide," Energy Secretary Steven Chu said in a statement.

President <u>Barack Obama</u> has set a goal of producing 80 percent of the U.S. electricity from clean-energy resources by 2035. Using existing dams to increase hydroelectric power is quicker and cheaper than building dams, according to the report.

Dams on major U.S. waterways such as the Mississippi, Ohio, Alabama and Arkansas rivers and their tributaries have the greatest potential for added power generation, according to the report. The dams are run by the U.S. <u>Army Corps</u> of Engineers.

"Putting turbines on existing dams is going to be less harmful than building new dams," said John Seebach, senior director for rivers management at American Rivers, a Washington-based group.

The U.S. hydroelectric industry is lobbying to extend a tax credit that expires at the end of 2013. Doubt about the tax break's future is already slowing development for projects that require long lead times, industry officials say, echoing an argument used by wind- and solar-energy producers that are also looking to extend subsidies.

Hydropower accounted for 6 percent of total U.S. electricity in 2011, and about 63 percent of the power from renewable sources. More than half of U.S. hydropower is generated in Washington state, Oregon and <u>California</u>, according to the Energy Department.

"Hydroelectric Power Seen Expanding 15% From Upgrading U.S. Dams", 17/04/2012, online at: http://www.bloomberg.com/news/2012-04-17/hydroelectric-power-seen-expanding-15-from-upgrading-u-sdams.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=37dfa6b890-RSS_EMAIL_CAMPAIGN&utm_medium=email



Taking the Waste Out of Wastewater'

Fourteen states suffering under drought. Water use in Southwest heads for day of reckoning. Water-pollution laws violated more than 500,000 times in five years. Ruptures in aging water systems cause pollutants to seep into water supplies.

The above reporting from The Times speaks to a growing reality: the United States faces a water crisis. In making the feature documentary "Last Call at the Oasis," I found the flow of evidence bracing in its breadth and acceleration, but the underlying dynamics are not new: we use more water than the system can naturally replenish, and we abuse the supply we have. During, say, periods of drought, we might fitfully curtail our consumption habits, but when it comes to long-term management strategies requiring long-term sacrifices, we balk. Isn't clean and abundant water a basic right? We just need to find more water!

While we can't "make" more water, there is one solution to water shortage problems that addresses issues of both quality and supply. Without mining an ancient aquifer, draining a natural spring or piping in the pricey harvest from a greenhouse-gas-and-brine-generating <u>desalination</u> plant, there is a solution to provide a valuable source of extremely pure water: reclaim it from sewage. The stuff from our showers, sinks and, yes, our toilets. In Israel, more than 80 percent of household wastewater is recycled, providing nearly half the water for irrigation. A new <u>pilot plant near San Diego</u> and a <u>national "NEWater" program</u> in Singapore show it's practical to turn wastewater into water that's clean enough to drink. Yet, in most of the world, we are resistant to do so.

Why?

We think we are rational beings, but we are not. We are emotional creatures, subject to obscuring feelings like fear and disgust. No one knows more about this than Paul Rozin, the subject of this piece, who has studied disgust for decades. His work shows us the fallacy in assuming that, given the facts, people will make logical choices. While recycled water may be a smart and clean way to manage our water supply, our primitive instincts are more programmed to fear the murky water hole than to worry about <u>climate change</u>, new contaminants and population growth. We should think green, but we can't help thinking brown. Until we understand the very human, irrational component to our actions — or lack thereof — we'll still be throwing out the baby with the bathwater.

The Academy Award-winning filmmaker Jessica Yu is the director of the forthcoming "Last Call at the Oasis," a feature documentary on the water crisis for Participant Media. Her nonfiction and scripted films include "Protagonist," "Ping Pong Playa" and "In the Realms of the Unreal."

"Taking the Waste Out of Wastewater",21/04/2012, online at: http://www.nytimes.com/2012/04/22/opinion/sunday/taking-the-waste-out-of-wastewater.html? r=1

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Earth Day's ups and downs reflect changing environmental movement

The 42-year-old event is riding a new wave of global protest

The 42nd Earth Day, held April 22, may not be a round milestone anniversary for those celebrating the annual event devoted to raising awareness about environmental issues, but it will come closer than any in recent memory to the spirit of <u>the first Earth Day</u> held across the U.S. in 1970.

That's because just like their predecessors, organizers of this year's Earth Day activities took inspiration from the popular protests happening around the world, choosing the slogan "Mobilize the Earth" as the theme for Earth Day 2012.

"This year, there was a lot of political activity worldwide — from the Middle East to the ... Occupy movement," said Kathleen Rogers, president of the Washington, D.C.-based <u>Earth Day Network</u>.

"For 2012, we felt mobilization as a concept was really critical, because it helps people understand that they can actually get going, they actually can get something done."

Rogers's group works with thousands of organizations and governments in almost 200 countries to promote and help organize Earth Day activities and to raise environmental awareness year-round. It grew out of the group that organized the first Earth Day and still has one of the movement's founders, **Denis Hayes**, on its board of directors.

Anti-war protests inspired 1st Earth Day

The idea for Earth Day was born in the U.S. at the tail end of the1960s amid the heated student protests opposing the Vietnam War. Founder <u>Gaylord Nelson</u>, a Democratic senator from Wisconsin who earned a reputation as a passionate conservationist during his two terms as governor of the state, was impressed by the passion driving the protest movement. He modelled the first Earth Day on the teach-ins that anti-war activists were holding on college campuses to educate students about America's involvement in the Vietnam War.

Nelson, who died in 2005, and his fellow organizers made environmental issues the focus of their "national teach-ins," and there was plenty to focus on in 1970.

Unchecked industrialization and urban sprawl had made air pollution a concern in many large American cities; the harmful effects of DDT and other pesticides were also on the public consciousness ever since the 1962 publishing of Rachel Carson's seminal book <u>Silent Spring</u>; and two high-profile incidents in 1969 put industrial pollution and its impact on the environment top of mind.

The two incidents were a **<u>blow-out</u>** on an Union Oil drilling rig off the coast of Santa Barbara that spilled 11.4 million litres of oil into the ocean, angering Californians who saw the devastating effects on their beaches and marine life, and a fire on the heavily polluted <u>Cuyahoga River</u> in Cleveland that drew attention to the industrial waste that had for years been voided into the waterway.



But the first Earth Day was much more than a day of protest: it was the beginning of the environmental movement in North America, says Hayes, who was the national co-ordinator of the first Earth Day events in 1970 and has remained involved in Earth Day activities and the environmental movement.

"One of the central goals of the event was to tie all of these diverse strands of environmentalism — people who were concerned about pesticides, people who were fighting freeways, people who hated air pollution, people who were worried because rivers were catching on fire — to tie them all together with one bow and make them recognize that they're part of a coherent movement," said Hayes, who today heads the Bullitt Foundation, a Seattle-based environmental organization.

1970 event spawned landmark legislation

Hayes was a 25-year-old university student when Nelson recruited him for his ambitious Earth Day initiative. He was interested in changing people's understanding of ecology and broadening the definition of environmentalism to include everything from eradicating nuclear and chemical weapons to promoting organic gardening, but he never thought the consciousness-raising rallies and activities he helped organize in 1970 would go on to have such a long-lasting impact.

Not only did the events themselves draw about 20 million people — from all walks of life and, thanks to Nelson's bipartisan efforts to include his Republican colleagues in the movement, from across the left-right political divide — the attention Earth Day brought to air and water issues in particular led directly to several key developments in U.S. environmental regulation.

They included the creation of the **Environmental Protection Agency** and the passing of the Clean Air Act later that year, the adoption of the Clean Water Act in 1972 and the passing of the Endangered Species Act in 1973.

"I'd be hard pressed to think of legislation in the last decade that begins to approximate the kinds of groundbreaking things that we had in the 1970 to the 1975 period," Hayes said.

The environmental laws passed in the 1970s, including in Canada, which passed the Canada Water Act in 1970 and created a Department of the Environment in 1971, were revolutionary in part because they linked environmental issues to public health, says Rogers.

"Prior to Earth Day, the laws were all about species conservation — primarily to [ensure hunters could] shoot them — or land conservation, like national parks," she said. "Earth Day 1970 is definitely the <u>Maginot Line</u> that was there, and everything that crossed over became about health and people, not animals and shooting and parks. It became about human beings more than anything."

Although it's harder to draw a direct line between the Earth Days of subsequent decades and substantive changes in environmental regulation, the day has remained relevant as a driver of environmental education and awareness.



1990s focused on changing behaviour

After a lull in activity during the 1980s, when, says Hayes, the day seemed to have "outlived its usefulness," the Earth Day movement was re-energized in 1990. In part, it was a reaction to eight years of an administration, under President Ronald Reagan, that was seen as hostile to environmental causes and that had, in the eyes of many, stalled or rolled back progress on air pollution, toxic waste and land and water conservation.

"In 1990, it began this shift away from focusing upon big federal pieces of legislation to the roles of states and, even more, communities and beyond that individuals," Hayes said. "The overall theme was 'Who says you can't save the world?' — trying to be feisty but get people to say this isn't all just a matter of getting Congress to pass some laws. This has to do with your choices as a consumer, your choices as an automobile- and home-owner, your choices as a parent."

The shift to environmentalism as a personal responsibility worked: between 1988 and 1992, the number of curbside recycling programs in North America exploded.

"I don't know of any other major thing that contributed to that except that emphasis back in Earth Day 1990," said Hayes.

Nineteen-ninety was also the year that Earth Day activities went global, expanding to more than 140 countries, including Canada.

Today, the Earth Day Network regularly works with groups and governments in countries as far afield as Oman, Morocco and Jamaica, organizing environmental lessons in schools and helping locals address their particular environmental concerns.

An while each jurisdiction tailors its Earth Day activities around the problems in that region, those who participate, says Rogers, see themselves as part of a "global environmental commons."

"Pollution from China hits L.A. in 48 to 50 hours, depending on the trade winds," she said. "People get that what you do in Brazil impacts our oxygen — mine or my kids' — and they're also connecting environmentalism to products. That's the big, significant change for the 21st century: that we get what's going on worldwide."

The climate-change conundrum

Over 40-plus years, Earth Day has come to be associated with all kinds of things its originators never dreamed of. And while it has always included a variety of activities from litter pick-ups and school composting programs to large urban rallies, in recent years it has increasingly also been used as an excuse to sell products or "green wash" corporations and governments that otherwise do little for the environment. (China, which despite its recent embrace of renewable energy and green technologies has an abysmal environmental record, issues an annual Earth Day stamp, for example).



"Gaylord and Denis a long time ago decided not to trademark or copyright [Earth Day]," said Rogers. "What it means is you get a wide variety of activities under the auspices of Earth Day. We've seen some pretty bad ones over the years. A mattress company will have an Earth Day sale — it's so random. You're, like, that's so ridiculous, but people then recognize Earth Day, and that's OK."

Hayes, 67, will be taking part in Earth Day activities on the National Mall in Washington this April 22, and he says this year's call to "mobilize" the populace is well placed.

"The 2000s, somewhat to my surprise, have become extremely divisive on environmental issues," Hayes said.

The 21st century, says Hayes, has pitted environmentalists trying to raise the alarm about climate change against those in industry and government waging a campaign to downplay the threat, discredit the science and protect economic interests dependent on fossil fuels.

"They tend to deal with slogans and populist rhetoric, and the [environmental] movement has come back with things that are studious and balanced and nuanced and polysyllabic," said Hayes.

"In 1970, we talked about poison. In 2000, we tended to talk about <u>polycyclic aromatic</u> <u>hydrocarbons</u>. 'Poison' is a more effective thing to say, and we're in the process of trying to learn once again how to communicate broadly with the population."

To date, Earth Day organizers — and the environmental movement in general — have not been as successful in getting people to care about global issues like climate change as the Earth Day instigators of the 1970s were in getting them to care about air and water pollution, which while also global issues could more easily be made local.

"People will get more engaged in ways that have political consequences to the extent that they see it affecting them or their families directly," Hayes said. "People care about the future of the world, but that's kind of an abstract concept."

Hayes says that's changing as more people begin to understand that climate change is not unrelated to the hurricanes, tornadoes, droughts and wildfires that occur in their communities

An Arab Spring for the climate

As part of the effort to mobilize the public to tackle climate change, several U.S. environmental groups plan to launch a large initiative in 2013 based around engaging young people through social media and crowdsourcing ideas on green technologies, renewable energy and others means of mitigating the factors contributing to climate change.

The aim, says Hayes, is to create "a huge public consensus-building exercise that hopefully will have some political consequences."



WATER RESEARCH PROGRAMME -Weekly Bulletin-

"In a sense, it's a climatic Arab Spring," said Hayes. "Climate has been mostly a television issue. It's something where people preach at other people or, in the case of <u>Al Gore's movie</u>, they provide a film, and you go and you watch it. But it's not a computer kind of issue where you are involved and engaged in doing something yourself.

"What we're trying to do is make that transition, so it's not just passive receptacles of information, but people who engage in it, challenge things and become committed to acting on the basis of their growing understanding of what's really going on."

"Earth Day's ups and downs reflect changing environmental movement", 21/04/2012, online at: <u>http://www.cbc.ca/news/world/story/2012/04/18/f-earth-day-analysis-denis-hayes.html</u>

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Section 3: Water What-Ifs

This next section of the draft report delves into potential infrastructure impacts. It begins with a look at the water supply — a LONG look.

This is a much-contested issue by those opposed to fracking, since it requires large amounts of water to complete the process: between three and five million gallons per well. In addition, aspects of the fracking process have been blamed for polluting drinking water in other gas-producing states.

The water used in natural gas production is pumped into the ground to aid in the fracturing of fissures already present in the gas-rich shale beds of Triassic basins. It's called fracking fluid, and is a slurry of sand, water, and chemicals. It is still uncertain how much of a negative impact fracking has on drinking water supplies, and further research regarding this is underway by the <u>Environmental</u> <u>Protection Agency</u>. The state's Department of Environment and Natural Resources pointed out that the first results of this study will be available this summer. But for now, the things we do know. Sort of.

The shale bed formation of the Deep River Triassic Basin reaches from the edge of Union and Anson counties at the South Carolina line up to the southern portion of Granville. It lies beneath several major surface water drainage areas.

While the report also addresses the Dan River and Wadesboro sub-basins, I'm going to stick close to home and delve a little into the Deep River formation here.

Within this space the Deep River and Haw River merge to form the Cape Fear River. Jordan River, the regional water supply source for this area, lies just inside the western boundary of the Triassic basin in Chatham County.

In Durham's sub-basin, the Eno, Little and Flat rivers flow into Falls Lake, the main water supply for the city of Raleigh.

In the Sandford sub-basin, there are 45 ground and surface water sources that supply public water systems, pulling from Little River tributaries and Cape Fear River supplies among others. Twenty-four of these sources tap waters within the Triassic Basin.

Now, while North Carolina has traditionally been considered a water-rich state, this is no longer always the case. Recent years have seen drought, and as of April 10, 2012, excepting 12 counties in



the mountain region, all other counties are considered to be either abnormally dry or in moderate drought according to the <u>NC Department of Water Resources.</u>

Pollution is also an issue, especially in areas where the population is growing rapidly, such as the Triangle. Falls Lake has been listed on the <u>Environmental Protection Agency's Impaired Water</u> <u>lists</u> for the past two cycles of water quality assessment reports, in 2008 and 2010, and efforts to clean it up are ongoing.

There are also fewer public water wells within the Triassic Basins as compared to outside of it. The rock and sediment composition of North Carolina's Triassic Basins are noted for having a limited ability to transmit water, meaning during "low-flow conditions," or extended periods of time between rainfalls when surface water is low and must be supported by groundwater discharges; our amount of available water is very low indeed.

So we have limited groundwater supplies, and some compromised surface water supplies. And we want to drill into the shale beds that run beneath these water supplies when the jury is still out on how much damage fracking does to drinking water.

And the issue of regulating this water withdrawal is another one entirely.

Tune in tomorrow to see who would be in charge of this regulation.

The short answer? We aren't sure!

"Section 3: Water What-Ifs", Laura White, 16/04/2012, online at: <u>http://www.raleighpublicrecord.org/fracking-2/2012/04/16/section-3-water-what-ifs/</u>

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