

# ORSAM

# ORSAM WATER BULLETIN

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







Issue 70

#### **ORSAM WATER BULLETIN**

#### 02 April - 08 April 2012

- **\*** Water pipeline to Cyprus promises more than just water
- **\*** Turkey provides clean water to 30,000 Somalis in Mogadishu
- **\*** Water resources ministry denies increase in Mosul dam cracks
- **\*** Eden restored: How a Scots group are bringing Iraq's marshes back to life
- \* Iran to Connect Caspian Sea to Persian Gulf
- Opinion: The other Arab Spring
- \* Arab world has an opportunity to change climate change perceptions
- Look How Unequally Water Is Divided In The Middle East
- Water Wars: Scarcity and Sustainability
- \* The Scientific Curmudgeon Are we doomed to wage wars of water?
- **\*** U.S. Intelligence Warns that Global Water Shortage May Lead to War in the Future
- Water conflict
- \* National Security Assessment: Water Scarcity Disrupting U.S. and Three Continents
- Nor any drop to drink
- ✤ Jordan Valley team hopes to abate climate change
- **\*** Is desalination the solution for Israel's water problems? Depends who you ask
- **\*** Kinneret water level highest in 9 years
- **\*** Wastewater that now goes to waste will soon irrigate Negev farms
- \* Israeli authorities flout court order to provide Bedouins with water
- Springwater flows in the West Bank, but who controls it?
- SunGlacier could produce water from air in the Egyptian desert
- **\*** World Bank grants 8 million USD to improve Mekong resources management
- Vietnam makes important contribution to ASEAN
- \* China Drought 2012: Three-Year-Long Dry Spell Continues in Southwest
- \* Growing Food Demand Strains Energy, Water Supplies



- \* Concerns over India rivers order
- \* Nepal Lawmakers Approve China Dam Project
- Parting the waters
- Water woes
- Increasing water prices may cut consumption, future risks
- Forum to showcase water saving system
- Environment Agency Develops Master Plan To Combat Threat Of Water Shortages In Abu Dhabi
- \* Nigeria: Lagos Water Everywhere but Not to Drink
- Pressure Control System Helps District Conserve Water
- Bennington College to host 'Water Dialogues'
- Master plan to combat threat of water shortages
- Abu Dhabi forms new water strategy
- ✤ 'A Tour of the New Geopolitics of Global Warming
- **\*** Water Part III: Get the Salt Out
- 'Awareness about water management, wastewater is increasing'
- **\*** Wind Turbine that Produces Drinkable Water
- \* The Right Water Debates in the Wrong Place
- ✤ Nigeria rated low in water sanitation implementation
- **♦** Iran sanctions scupper Ethiopia's power exports
- \* Dredging the Nile tributaries will not solve rising food prices in South Sudan
- ✤ Feature: Indian water industry: Future prospects & Way ahead



#### **\*** Water pipeline to Cyprus promises more than just water

Turkey and the Turkish Cypriots took a major step towards the construction of an underwater pipeline, dubbed the "Life Water" project, which will eventually pump drinking water to Cyprus.

The groundbreaking ceremony on March 30th at the Gecitkoy dam, near Girne on the Turkish side of the island, marked the second phase of a four phase 850 million TL (\$478m), 107-km project that will bring 75 million cubic metres of water per year to the island.

The first phase of the project was inaugurated last year with the construction of the Alakopru Reservoir in Turkey's southern province of Mersin from where the water will be sourced. The two remaining phases, building an underwater pipeline and supporting infrastructure, are schedule to be completed by 2014.

Water shortages have been a longstanding problem on the divided island due to population growth, overuse of groundwater for consumption and agricultural use, and increased demand during the tourism season. High water salinity has also contributed to the degradation of soil.

Turkey has been looking to transfer water from the mainland since the early 1990s. Due to technical difficulties, earlier projects hit a number of stumbling blocks, but now the project has moved well beyond being just another "pipedream", analysts say. Turkey and northern Cyprus also plan to lay an electricity cable connecting the islands in the future.

Ahmet Sozen, a professor of international relations from Eastern Mediterranean University, says the project now has the necessary political and economic backing.

"This is a big project and I think this is going to be feasible given the fact that this has been supported and promoted by all the highest ranking state officials in Turkey," he told *SETimes*, adding that a number of prestigious companies are managing the project, which will be entirely funded by Turkey.

Tugba Evrim Maden, a hydropolitics researcher at the Ankara-based Center for Middle Eastern Strategic Studies, says the project will not only overcome chronic water problems on Turkish Cyprus, but will also contribute to economic development.

Maden says the pipeline will further tie Turkey and the Turkish Cypriots together, but that it may also leave the door open to co-operation and interdependence between Turkish and Greek Cypriots down the line.

"As Greek Cypriots also have some problems getting enough water resources, they will also demand to benefit from the project in the future, although not immediately," she said.

Both Turkish and Turkish Cypriot officials have underlined that water could ultimately be transferred to the Greek side of the island if there is a settlement between the island's two communities, opening the door for water to play a role in any future peace agreement.



On the other hand, Turkish Minister of Forestry and Water Works Veysel Eroglu likened the project to an umbilical cord connecting Turkish Cyprus to the motherland during a speech he made on March 30th.

According to Sozen, water could be used as "peace water" within the island to create the interdependence and mutual prosperity.

Didem Akyel, a Cyprus expert from the International Crisis Group, says a major reason behind the failure of reunification talks has been the lack of contact between Greek Cypriot officials and Turkey.

"As a result, there is no trust between the sides and neither believes the other wants a solution or will stick to an eventual deal," she said. "In this context, the water issue can present a great commercial opportunity for co-operation between the sides, with the involvement of the Turkish Cypriots as the middle-man in transporting this water," she told *SETimes*.

However, Akyel says sharing water resources should not be made conditional on a solution to the Cyprus problem.

"It is needed now, in order to make it possible to reach a more sustainable, mutually-agreed settlement on the island," Akyel argued, adding that Greek Cypriot officials should also be open to talk to both Turkish Cypriots and to Turkish officials without setting preconditions.

"Water pipeline to Cyprus promises more than just water", Menekşe Tokyay, 03/04/2012, online at: <u>http://www.setimes.com/cocoon/setimes/xhtml/en\_GB/features/setimes/features/2012/04/03/feature-04?utm\_source=Circle+of+Blue+WaterNews+%26+Alerts&utm\_campaign=32ba6750da-RSS\_EMAIL\_CAMPAIGN&utm\_medium=email</u>

BACK TO TOP



#### **\*** Turkey provides clean water to 30,000 Somalis in Mogadishu

Turkey's State Waterworks Authority (DSI) has drilled wells in the Somali capital of Mogadishu, providing clean water to 30,000 Somalis.

According to DSI officials, DSI drilled wells in Mogadishu so that people staying in tent camps as well as in other parts of the city can access an adequate supply of clean water, the Anatolia news agency reported on Monday.

Ahmet Şekerci, DSİ's project official in Mogadishu, told Anatolia they would continue to dig wells to help meet the needs of the Somali people.

Since Turkey launched its humanitarian aid campaign to help drought-stricken Somalia last year, it has organized fund-raising drives both at home and abroad, provided scholarships to hundreds of Somali students to receive an education in Turkey and opened hospitals and schools in Somalia. Turkey has sent \$365 million (TL 640 million) in cash and aid in kind to Somalia over the past year.

Turkey has also begun Turkish Airlines (THY) flights to Somalia, opened an embassy in Mogadishu and established a tent city for 10,000 people.

"Turkey provides clean water to 30,000 Somalis in Mogadishu", 02/04/2012, online at: http://www.todayszaman.com/news-276109-turkey-provides-water-to-30000-somalis.html

BACK TO TOP



# **\*** Water resources ministry denies increase in Mosul dam cracks

BAGHDAD, April 2 (AKnews) - The Ministry of Water Resources today denied the increasing number of cracks in the Mosul dam.

The general director of ministry's projects department Ali Hashem said: "The reports obtained by the ministry confirm the absence of any fears from the collapse of the dam, and the reports that foreign and local media mentioned are inaccurate."

Britain's *Daily Telegraph* newspaper published a detailed report yesterday about the increasing cracks in the Mosul dam and warned the government about its collapse.

Hashem said the ministry is working on an ongoing basis to repair and rehabilitate the dam.

The latest warning to the Iraqi government was yesterday by a Japanese organization, which mentioned the delayed maintenance of the dam.

The organization also warned of the presence of a high proportion of salt and phosphate in the foundations of the dam. Cracks are now appearing in foundations and this has increased fears over a possible collapse.

The ministry assured previously that the cracks are under control and that the collapse of the dam is not possible.

In 2006, the US administration warned of the risk of the 80-year-old dam, the fourth largest in the Middle East, collapsing and exposing Mosul's 1.7 million inhabitants to a 20-meter-high wave of water and extensive flooding.

Germany's *Hermes* magazine published last year reports that the concrete base on the right hand side of the dam may collapse this year if the Iraqi government fails to address the issue immediately.

Ministry statistics reveal that Mosul dam costs the government around \$500,000,000 (583bn IQD) each year to maintain. It is Iraq's biggest dam and holds back a reservoir that contains between 8-11 billion cubic meters of water used in agriculture, fish-farming and power generation through a nearby hydroelectric plant.

The 113-meter-high dam situated on the Tigris River was constructed by a joint German-Italian company in the first half of the 20th century.

"Water resources ministry denies increase in Mosul dam cracks", 02/04/2012, online at: http://www.aknews.com/en/aknews/3/299315/

BACK TO TOP



# **Eden restored: How a Scots group are bringing Iraq's marshes back to life**

Believed by many to be the garden planted by God in Genesis, Iraq's marshes were home to a unique array of flora and fauna. Drained and cleared of indigenous people under Saddam Hussein, the wetlands became a wasteland. Now a group of Scots is helping bring the area back to life

LOOKING over the vast, dry wasteland, it is hard to imagine this area was once part of the lush, fertile, Mesopotamian marshes of southern Iraq. Believed to be the origins of the Garden of Eden as described in both the Koran and the Bible, the cradle of civilisation, this wetland area – originally the size of Lebanon and the largest wetland ecosystem in the Middle East – was home to thousands of Marsh Arabs and a diverse range of animals and birds. Yet after the 1991 Gulf War, the whole area was drained and the residents removed at gunpoint by Saddam Hussein.

As we travel onward, I begin to see small mounds, seashells littering the floor, pieces of clay pots, medicine bottles and lots of half-buried shoes. This is, in fact, a 20-year-old archaeological site, evidence of a once thriving village of small reed houses once inhabited by Marsh Arabs.

Remarkably, the only people living here now are the Bedouin who travel through these inhospitable places with their legions of camels. They too have been displaced, their original desert home now dotted with oil wells. It is hard not to see the irony as one minority replaces another – a type of evolution, you could say.

I have travelled to Iraq with Tony Miller, director of the Centre for Middle Eastern Plants at Edinburgh's Botanic Garden. He is working with Nature Iraq, the country's first NGO, in the northern, mountainous part of country, as part of the Darwin Project, funded by Defra (Department for Environment, Food and Rural Affairs). This area, in common with the marshes, is waiting for the government rubber stamp to confirm national park status. Miller hopes his extensive experience of working with community engagement in conservation projects, promotion of eco tourism and training of botanists in northern Iraq can be used to help Nature Iraq and its work in the marshes. He wants to eventually undertake a full survey of the plants found here then produce a guide that can be used for managing the area, to train botanists and eventually for eco tourism.

Miller is representing the team behind Royal Botanic Garden Edinburgh's flagship exhibition of 2012, Paradise Restored – plants, people and projects in south-west Asia. It will include projects from across the area but has a number of Iraq examples, including a specific section about the marshes. The Botanics also aims to demonstrate the Marsh Arab tradition of weaving with reeds. To do this, it needs to raise the money to bring over a traditional reed boat as well as a weaver from the marshes who will use Scottish reeds to construct something in Scotland at RBGE.

Our guide through the Garden of Eden restoration project is Jassim Al Asadi, director of Nature Iraq. He himself is a Marsh Arab, removed from the wetlands with his family at the age of 32 and later imprisoned and tortured by the Ba'athist secret police. He looks across the mass of burnt reed stumps, which were once six metres high, and tells me that it still makes him sad after all these years. "It was such a beautiful place," he says, shaking his head.



Yet, not far from such desolation lies what is hopefully the beginning of an ecological miracle. The restoration of the marshes, started in 2003 with the demolition of the dykes that held back the water of the Tigris and the Euphrates, means that the reeds are once again growing, their roots lying deep in the dry earth, waiting for the water to return.

Of the three marshes, Al-Hawizeh, Central and Hammar, only Al-Hawizeh survived, due to a river flowing into it from Iran. By 1993, however, it stood at just ten per cent of its original size. Interestingly, since the US invasion, the Iranian government has built a dam stopping this water from flowing into the marsh – a reminder of how politics and water go side by side in the Middle East. Now half of the whole area has been re-flooded and around 10,000 Marsh Arabs have returned to fish, breed buffalo and harvest the reeds.

Yet this remarkable recovery has been hindered by a major drought in 2008 and extensive dambuilding. Within Iraq there is also a massive water shortage, and we see for ourselves on our visit to the Al-Hawizeh marsh the effects the dams – being built to take water for agriculture – are having. Water levels are worryingly low; mud flats are exposed, dried reed beds visible and algae thick on the water surface. Our Nature Iraq guide, botanist Nabeel Abdulhasan, is shocked at the change since his last visit, in 2010. "By the summer," he says, "all the fish will be dead and the only place in Iraq where you can find water lilies could be gone."

Richard Porter, of Bird Life International, a colleague of Miller's and someone who has been involved with the restoration of the marshes, is upbeat about its recovery. "One of the most important discoveries is that, even with large-scale draining of the marshes, no breeding bird species has become extinct."

He cites the marshes as especially important to ten globally endangered species, including the Basra reed warbler, of which there are now 3,000 pairs, the area being their only breeding place in the world. To ensure an income from tourism, one of the area's greatest assets is undoubtedly its bird life, once described by travel writer Gavin Young as "the marshes' crowning beauty".

In recent years, with financial help from the Italian government, Nature Iraq has built regulators and mini dams along the marshes to help ensure a sustainable water supply from the Euphrates in the future. Yet, for political, economic and environmental reasons, as 2008 highlighted, the supply of water from the rivers to the marshes is not guaranteed. Miller explains, "The problems of water supply are outside the control of the marshes – the Euphrates and Tigris being dammed upstream in Turkey and Syria and irrigation for agriculture taking water away."

This refers to the highly controversial Ilisu dam being built in Turkey and whose effects could be devastating to the marshes. Nature Iraq is trying to promote a more sustainable use of water, using a drip system to feed agriculture rather than the ancient but highly wasteful method of flooding and then draining whole areas.

The organisation is also looking to build proper communication channels with the returning Marsh Arabs to ensure good environmental practices are used. For example, there is a four-month moratorium on fishing to allow fish to breed and lay eggs, something strictly enforced under Saddam Hussein. This is now widely ignored, as is the hunting ban, with reports coming into the Nature Iraq



offices of two otters and two wildcats being captured and killed by hunters in the week of my visit. Also, electricity is used in fishing – again, highly unsustainable.

Yet as I sit in a boat on the glistening blue water, listening to frogs, watching the birds and hearing the singing of the Marsh Arabs as they harvest the reeds, it is hard not to be impressed. Despite the catalogue of problems the marshes face, the way in which people and nature can recover from such devastation and rebuild is remarkably robust.

"Eden restored: How a Scots group are bringing Iraq's marshes back to life", 08/04/2012, online at: http://www.scotsman.com/news/eden-restored-how-a-scots-group-are-bringing-iraq-s-marshes-back-to-life-1-2220935

#### BACK TO TOP



# \* Iran to Connect Caspian Sea to Persian Gulf

# **TEHRAN** (FNA)- Iran will soon launch a plan to connect the Caspian Sea to the central regions of the country and the Persian Gulf, Energy Minister Majid Namjou said.

According to the minister, this plan aims to provide water for industrial and agricultural purposes in Central Iran. In the areas of the country remote from the Caspian Sea about 500 million cubic meters of water can be transmitted per year, Namjou said.

He added that the plan is developed based on the idea of connecting the Caspian Sea in the North to the Persian Gulf in the South.

Iran plans to build a navigable canal Caspian-Persian Gulf. This means building a transcontinental channel about 600 kilometers long, of which nearly 350 kilometers will be held on the fairways of the rivers Kyzyluze flowing into the Caspian Sea and Karkheh flowing into the Persian Gulf.

Iranian experts have estimated the cost of laying a water artery between the Caspian Sea and the Persian Gulf to stand at around \$6.5 to \$7 million. The project connects the North Atlantic to the Indian Ocean along the shortest route, and its creation could push back the strategic importance of the Black Sea, the Aegean straits and the Suez Canal.

"Iran to Connect Caspian Sea to Persian Gulf", 08/04/2012, online at: <u>http://english.farsnews.com/newstext.php?nn=9101140721</u>

BACK TO TOP



# Opinion: The other Arab Spring

Isn't it interesting that the Arab awakening began in Tunisia with a fruit vendor who was harassed by police for not having a permit to sell food -- just at the moment when world food prices hit record highs?

And that it began in Syria with farmers in the southern village of Daraa, who were demanding the right to buy and sell land near the border, without having to get permission from corrupt security officials? And that it was spurred on in Yemen -- the first country in the world expected to run out of water -- by a list of grievances against an incompetent government, among the biggest of which was that top officials were digging water wells in their own backyards at a time when the government was supposed to be preventing such water wildcatting?

As Abdelsalam Razzaz, the minister of water in Yemen's new government, told Reuters last week: "The officials themselves have traditionally been the most aggressive well diggers. Nearly every minister had a well dug in his house."

All these tensions over land, water and food are telling us something: The Arab awakening was driven not only by political and economic stresses, but, less visibly, by environmental, population and climate stresses as well. If we focus only on the former and not the latter, we will never be able to help stabilize these societies.

Take Syria. "Syria's current social unrest is, in the most direct sense, a reaction to a brutal and out-of-touch regime," write

Francesco Femia and Caitlin Werrell in a report for their Center for Climate and Security in Washington. "However, that's not the whole story. The past few years have seen a number of significant social, economic, environmental and climatic changes in Syria that have eroded the social contract between citizen and government. ... If the international community and future policymakers in Syria are to address and resolve the drivers of unrest in the country, these changes will have to be better explored."

From 2006-11, they note, as much as 60 percent of Syria's land experienced one of the worst droughts and most severe set of crop failures in its history. "According to a special case study from last year's Global Assessment Report on Disaster Risk Reduction, of the most vulnerable Syrians dependent on agriculture, particularly in the northeast governorate of Hassakeh (but also in the south), 'nearly 75 percent ... suffered total crop failure.' Herders in the northeast lost around 85 percent of their livestock, affecting 1.3 million people." The United Nations reported that more than 800,000 Syrians had their livelihoods wiped out by these droughts, and many were forced to move to the cities to find work -- adding to the burdens of already incompetent government.

"If climate projections stay on their current path, the drought situation in North Africa and the Middle East is going to get progressively worse, and you will end up witnessing cycle after cycle of instability that may be the impetus for future authoritarian responses," Femia argues. "There are a few ways that the U.S. can be on the right side of history in the Arab world. One is to enthusiastically and robustly support democratic movements."

The other is to invest in climate-adaptive infrastructure and improvements in water management -- to make these countries more resilient in an age of disruptive climate change.

An analysis by the U.S. National Oceanic and Atmospheric Administration, published in October in the Journal of Climate, and cited on Joe Romm's blog, <u>climateprogress.org</u>, found that droughts in wintertime in



the Middle East -- when the region traditionally gets most of its rainfall to replenish aquifers -- are increasing, and human-caused climate change is partly responsible.

"The magnitude and frequency of the drying that has occurred is too great to be explained by natural variability alone," notes Martin Hoerling, of NOAA's Earth System Research Laboratory, the lead author of the paper. "This is not encouraging news for a region that already experiences water stress because it implies natural variability alone is unlikely to return the region's climate to normal."

Especially when you consider the other stresses. Nafeez Mosaddeq Ahmed, executive director of the Institute for Policy Research and Development in London, writing in The Beirut Daily Star in February, pointed out that 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 -- are in the Middle East, and after three decades of explosive population growth these countries are "set to dramatically worsen their predicament. Although birthrates are falling, one-third of the overall population is younger than 15 years old, and large numbers of young women are reaching reproductive age, or soon will be." A British Defense Ministry study, he added, "has projected that by 2030 the population of the Middle East will increase by 132 percent -- generating an unprecedented 'youth bulge."

And a lot more mouths to feed with less water than ever. As Lester Brown, president of the Earth Policy Institute and author of "World on the Edge," notes, 20 years ago, using oil-drilling technology, the Saudis tapped into an aquifer far below the desert to produce irrigated wheat, making themselves self-sufficient. But now almost all that water is gone, and Saudi wheat production is, too. So the Saudis are investing in farm land in Ethiopia and Sudan, but that means they will draw more Nile water for irrigation away from Egypt, whose agriculture-rich Nile Delta is already vulnerable to any sea level rise and saltwater intrusion.

If you ask "what are the real threats to our security today," said Brown, "at the top of the list would be climate change, population growth, water shortages, rising food prices and the number of failing states in the world. As that list grows, how many failed states before we have a failing global civilization, and everything begins to unravel?"

Hopefully, we won't go there. But, then, we should all remember that quote attributed to Leon Trotsky: "You may not be interested in war, but war is interested in you." Well, you may not be interested in climate change, but climate change is interested in you.

Folks, this is not a hoax. We and the Arabs need to figure out — and fast — more ways to partner to mitigate the environmental threats where we can and to build greater resiliency against those where we can't. Twenty years from now, this could be all that we're talking about.

"Opinion: The other Arab Spring", 07/04/2012, online at: <u>http://www.nytimes.com/2012/04/08/opinion/sunday/friedman-the-other-arab-spring.html?pagewanted=1& r=2</u>

BACK TO TOP



#### Arab world has an opportunity to change climate change perceptions

The attention of much of the Arab world has recently been focused on the landmark Arab League summit, held between 27 and 29 March, the first to be held in Iraq since 1990. Going forwards, however, preparations are already underway for an even bigger, global conference later this year that will focus the eyes of the globe once again upon the Arab world, specifically Qatar. When it was announced that Qatar, rather than South Korea, would host this year's U.N. climate change conference in December, many were exasperated. Would it really be a good idea for climate change negotiations to be in the hands of a state whose economy is so dependent on selling fossil fuels and that has the highest greenhouse gas emissions per capita in the world?

My answer to this question is a resounding yes. The 18th Conference of the Parties to the U.N. Framework Convention on Climate Change (or COP18 in the jargon) is the first step in a 4-year negotiation process towards a new, legally binding international deal to take effect by 2020. The fact that these negotiations will take place in Qatar presents an opportunity to engage with a constituency – the oil-rich Gulf States – that is fundamental to the success of any long-term strategy to tackle climate change and yet, until now, has been at best largely ignored or, at worst, demonized.

Qatar, state of just 1.4 million inhabitants and with one of the world's highest GDP per capita due to vast reserves of oil and gas, has been making a concerted effort to impress on the world stage. It has played prominent mediation roles in Western Sahara, Yemen, Ethiopia and Eritrea, Somalia and Sudan. In 2001 it initiated the "Doha round" of talks under the WTO to try to break the deadlock in these complex negotiations. And, more recently, it was announced that this state would host the 2022 FIFA World Cup. Qatar will undoubtedly be looking to make an impact on the climate negotiations.

So, how could the Qatari government make a difference on climate change? By making a gamechanging investment in the development of carbon capture and storage (CCS), the technology to capture CO2 emissions from the burning of fossil fuels and storing them underground. It has the motive and the money. And the Qataris would receive huge international kudos. China, a country with the highest greenhouse gas emissions (and increasing rapidly), is the perfect partner.

Fossil fuels are likely to remain a major part of the global energy mix for decades. Without a way of reducing the impact of burning fossil fuels on our climate there is no credible scenario under which the international community can reduce emissions of greenhouse gases sufficiently to limit global average temperature rise to 2 degrees Celsius, the agreed goal under the U.N. negotiations. And yet, so far, progress to demonstrate and deploy CCS technology at scale has been painfully inadequate.

CCS technology is not yet mature and is expensive. In the long-term CCS will be viable if it is cheaper to capture and store the CO2 emissions than to release them into the atmosphere. This means there must be a sufficient cost imposed on installations that emit carbon. Estimates suggest that, once CCS technology is mature, a carbon price – the cost of emitting carbon into the atmosphere – of between \$44 and \$103 will be sufficient to make CCS viable. Although the current price of carbon in the EU (the world's major carbon market) is around 9 (12), a tightening of the cap on emissions from 2013 means that a sufficient carbon price in the EU is a distinct possibility.



If one takes into account recent laws and proposals to set up carbon markets in Australia, China, Mexico, South Korea and California in the U.S., it is not too much of a leap to imagine a price of carbon high enough to make CCS viable across a range of countries. The problem is not that CCS isn't viable in the long-term; the problem is that, in the short- to medium-term, it is going to require big capital investments to build the commercial scale demonstration projects that will help to bring down the costs to a long-term equilibrium. Until now, with a lack of regulatory certainty about the future price of carbon and the fiscal challenges to governments and businesses in the economic downturn, investments have not been forthcoming on the scale required.

This year could see the planets align.

First, on the fossil fuel supply side, Qatar and the other Gulf States have a motive. CCS is a great technology for countries that sell fossil fuels. It allows the burning of these fuels in a way that does not damage the climate, thus potentially prolonging the life of the markets for fossil fuels, even in a highly carbon constrained post-2020 world.

Second, on the demand side, China's production of a fossil-fuelled power station a week offers the opportunity to bring down costs fast. And with coal and oil-dependent China likely to take on some form of emissions reduction target under a post-2020 climate change deal, it is now in China's strategic interest to commercialize this technology quickly.

Finally, the regulatory outlook is more certain. Before the most recent round of U.N. negotiations in South Africa in December, many commentators thought that the legally binding nature of the UN process would dissipate when the Kyoto Protocol's first commitment period expired in 2012. Durban changed that. The Kyoto Protocol was extended and there was agreement from all countries to begin negotiations on a legally binding agreement for the post-2020 period and to complete those negotiations by 2015. So it is now more likely that there will be stricter carbon constraints on all major countries after 2020, reducing the regulatory risk of investment in CCS.

Qatar and fellow supply countries, either through their massive Sovereign Wealth Funds or other means, should take the opportunity to commercialize a technology that is essential under any scenario that limits global average temperature rise to 2 degrees Celsius. China, with its increasing reliance on Middle Eastern oil, is keen to strengthen its relationships with key supply countries, as evidenced by Premier Wen's visit to Saudi Arabia, UAE and Qatar in January, and will be thinking strategically about how it will power its economy whilst taking on post-2020 carbon constraints. The added bonus for both countries is that, once commercialized, CCS technology will be exportable around the world, creating jobs and wealth in a new low carbon industry.

The opportunity is clear. Qatar, as hosts of COP18, will be looking for something symbolic. This could just be it.

"Arab world has an opportunity to change climate change perceptions", Al Arabiya, 01/04/2012, online at: http://mideastenvironment.apps01.yorku.ca/?p=4711

BACK TO TOP



# Look How Unequally Water Is Divided In The Middle East

THE southern provinces on Lebanon's border with Israel fare worse than the rest of the country by most measures. Water is one thing in short supply. Swathes of fertile farming land sit idle. Officials say the lack of water is partly to blame for the region's underdevelopment. While Lebanon as a whole has water in abundance, the south's rivers are shared with Israel which gets the lion's share. This is nothing new, but a new study has sketched out the extent of the imbalance for the first time.

Rivers that straddle borders have long caused tensionns in the Middle East. International law says that the useable water should be divided into "equitable and reasonable" portions according to such factors as population. But this directive is often overruled by bilateral agreements. These are lawful but often outdatedand the more powerful country usually gets the better deal."

"Look How Unequally Water Is Divided In The Middle East", 03/04/2012, online at: <u>http://peakwater.org/2012/04/look-how-unequally-water-is-divided-in-the-middle-east/</u>

BACK TO TOP



# Water Wars: Scarcity and Sustainability

Obviously life does not exist without water. In the coming years water rights, water scarcity, and lack of potable water will become pressing issues for not only humankind, but for all living entities including plants, animals, etc. The Water Project is a charity organization dedicated to finding solutions to the world's problematic lack of potable water and they report that nearly a billion people suffer because they have little to no access to clean drinking water. The United Nation's Food and Agriculture Organization reports that water use has grown at more than twice the rate of population growth, meaning that people are using more water now than ever before. Clearly, this is a large and complex problem that will take extensive efforts on global, national, and local levels.

A central problem that contributes to the unequal distribution of water throughout the world is "virtual water." Virtual water is water that is used to produce a product or good and by no means is virtual water used in a sustainable matter. A study performed from 1995-2006 by scientists at the University of Twente in the Netherlands was published in the Proceedings of the National Academies of Science and the study shows that virtual water accounts for more than 22 percent of water consumed worldwide. The study hopes to raise awareness in national governments worldwide in order to provoke conscious and conscientious efforts to make water usage as sustainable and non-pollutant as possible. The following graphic provided by <u>The New York Times</u> depicts how some countries (in green shades) are exporting virtual water and how other countries are importing virtual water to produce goods (in shades of red).



Of that virtual water, 92 percent is used globally for agriculture. Cereal grains like wheat, rice, and corn consume 27 percent, meat production takes up another 22 percent, and dairy clocks in at 7 percent of that usage. Overall, virtual water accounts for one fifth of the water consumed globally, meaning water has become a valuable commodity as well as a necessity. By tracking where virtual water goes the study shows how some countries are utterly dependant on foreign water supplies. The dependant countries include North Africa, the Middle East, Mexico, Europe, Japan, and South Korea. Another problem that exportation of water creates is that the exported goods and water polluted ground and surface water more heavily than domestic goods. The study shows that Central and Southwest Asia and North Africa have the most unsustainable water usage.

Beyond depicting how water is imported and exported and to what end, the study also shows who uses the most water. There is a large disparity in the amount the United States uses when compared to



its population. For instance, the United States is the third largest consumer of freshwater, despite the fact that it is populated by only 5 percent of the world's population. Only China and India, the most densely populated countries in the world, surpass the United States in water consumption. The most disturbing fact is that the United States per capita consumes 2,842 cubic meters a year, whereas China and India consume 1,089 meters and 1,071 meters respectively. The study attributes this difference to the amount of beef Americans consume, which is relatively high when compared with other similar industrialized nations like Britain. Producing beef is incredibly water intensive.

The Twente study shows that water is an essential part of today's economy, not to mention all life on earth. Therefore the importance of clean, potable drinking water cannot be emphasized enough. In order to reverse the inequality in water distribution and help keep water a sustainably used resource you can support groups like <u>*The Water Project*</u> or <u>Global Water</u> which work to create safe drinking water and maintain responsibility in water usage around the world.

"Water Wars: Scarcity and Sustainability", 02/04/2012, online at: <u>http://greenanswers.com/news/279851/water-wars-scarcity-and-sustainability</u>

BACK TO TOP



#### The Scientific Curmudgeon - Are we doomed to wage wars of water?

Water, water, everywhere. But will we always have enough to drink? Wash away our waste? Grow crops and raise livestock? Some prominent pundits are warning that, as our population grows and our planet warms, water will become increasingly scarce, and humans will inevitably start fighting over it.

War-correspondent-turned-antiwar-firebrand Chris Hedges expressed this idea during a radio interview with Brian Lehrer of WNYC radio, NPR's affiliate in New York City. For more than a month, Lehrer has been hosting discussions of my claim — spelled out in my new book The End of War — that war is not inevitable. On February 27, Lehrer went to the heart of the matter and asked Hedges, "Chris, is war inevitable?"

"Yeah," Hedges responded. "Look, we are living through a time when there is no rational check on serious climate change. We are spending down our natural capital at an alarming rate. Issues as basic as water, and crop yields. I mean, the agronomists say that for every one degree rise in temperature there is a 10 percent loss of yields. Human societies, when they break down, when they don't have access to basic commodities, will engage in aggressive behavior to attempt to survive. And with the shredding of Kyoto, the failure in Copenhagen, the utter blindness to address what the fossil-fuel industry is doing not only to the country but to the planet, I think in fact we are entering a time where there will be an increase in conflict, scrambling for deleted resources as groups, including nation-states, attempt to survive." This same idea has been cited by green leaders such as Bill McKibben.

But a 1992 study of 186 societies, most of them pre-industrial, by the anthropologists Carol and Melvin Ember found no evidence that scarcity of food, water and other resources leads inevitably or even usually to violent conflict. The strongest correlate of warfare was a history of unpredictable natural disasters — such as floods, droughts and insect infestations — that disrupted food supplies.

The Embers were careful to note that it was not the disasters themselves that precipitated war, but the memory of past disasters and hence the fear of future ones. Another correlate was a society's distrust of neighboring societies. "Fear appears to be a common thread in the two obtained predictors of wars — fear of nature and fear of others," the Embers concluded.

In other words, wars stemmed from factors that were primarily emotional, not ecological. Of course, societies in a region with a history of war also fear war itself; hence they arm themselves and even launch preemptive attacks against other groups, making their fear self-fulfilling. The irony — or tragedy — is that war often inflicts on us deprivation far worse than that which we feared.

Given the Embers' finding of a link between war and fear, I worry about the warnings of alarmist such as Hedges that climate change will trigger wars over water and food. Rather than inspiring people to install water-saving showerheads in their bathrooms and support alternative-energy research, alarmists might provoke voters to stockpile guns and ammo and support higher defense budgets.



A new report, "Global Water Security," by U.S. intelligence agencies seems at first glance to support predictions of water wars. The report states that over the next decade "water problems will contribute to instability in states important to U.S. national security interests." Moreover, "as water shortages become more acute beyond the next 10 years, water in shared basins will increasingly be used as leverage; the use of water as a weapon or to further terrorist objectives will become more likely."

That sounds like bad news. But here's the good news: "Historically, water tensions have led to more water-sharing agreements than violent conflicts." The report notes that India and Pakistan have managed to reach water-sharing agreements in spite of their hostility toward each other; so have Israel and Jordan. The report adds that "improved water management (e.g., pricing, allocations and 'virtual water' trade) and investments in water-related sectors (e.g., agriculture, power and water treatment) will afford the best solutions for societal and global water problems."

In other words, we are not facing "inevitable" conflict. We are facing, as always, a choice. When water shortages loom, nations vying for control of a river, say, may build up armaments, threaten each other and carry out pre-emptive strikes. Or they can join together in finding solutions that provide greater long-term benefits to both populations. I wish Hedges and other talking heads would acknowledge our capacity to choose this latter option instead of claiming that we're doomed to wage wars over water.

"The Scientific Curmudgeon - Are we doomed to wage wars of water?", John Horgan, 05/04/2012, online at: <u>http://www.thestute.com/the-scientific-curmudgeon-are-we-doomed-to-wage-wars-of-water-1.2841061#.T39ZdNmpYvs</u>

BACK TO TOP



# **\*** U.S. Intelligence Warns that Global Water Shortage May Lead to War in the Future

The <u>U.S. Intelligence</u> warns that in the coming decades water shortages across the globe will lead to conflict and possibly war between nations. The report, which was requested by Secretary of State Hillary Rodham Clinton, notes that within the next ten years the risk of war over water shortages will most likely be minimal; however, beyond 2022, the risk will increase, particularly in areas such the Middle East, North Africa, and Southeast Asia.

Many on this planet already suffer from the effects of having very little to no access to clean water. According to the <u>United Nations Children's Fund (UNICEF) and the World Health Organization</u> (WHO), 884 million people do not have access to clean water and approximately 3.575 million people die from water-related illnesses each year. The report warns that in the future, water shortages will also be the impetus for war and terrorist attacks.

The report, which is based on a classified National Intelligence Estimate on water security, alleges that corrupt and weak governments, floods, poverty, and scarcity of water could lead to the downfall of a number of states. In the past, nations have worked on resolving water shortage crises through negotiation, but the report warns that as the problem becomes more severe, water may be used as leverage or as a weapon by terrorist organizations. The report also says that more powerful upstream nations will have the upper hand (no pun intended) over their neighboring downstream nations, and may try to use water as a means of control. Furthermore, water-related infrastructure such as dams and reservoirs may more frequently become the target of attacks by terrorists and other threatening forces.

What is concerning is that dozens of <u>nations</u>, such as Botswana, Cambodia, the Congo, Gambia, Sudan, and Syria, obtain water from rivers that flow into bordering nations considered hostile. Furthermore, there has already been conflict over water among nations in the Middle East such as Israel and Syria. Although the report failed to mention any specific nations that are at risk for water-related conflict, the report made mention of the Amu Darya in Central Asia, the Brahmaputra and Indus in India and South Asia, the Euphrates and Tigris in the Middle East, the Mekong in China and Southeast Asia, and the Nile in Egypt and Sudan.

Additionally, population growth and an increase in water usage have placed a strain on already existing water resources. According to the <u>World Bank</u>, the global demand for water is doubling every 21 years. Environmental concerns, such as desertification and climate change, raise even more questions and concerns regarding our existing water sources.

Currently, there are several theories and arguments on how to solve the global water shortage crisis. Some believe that technological advances such as <u>desalination</u> – a process in which saline water is converted into freshwater – is the answer to water shortage crises, whereas others believe that a more business-minded approach is needed. For instance, the Harvard Middle East Water Project believes that water could be made into a commodity for sale in order that demand and supply are both taken into consideration.



The United States may have come up with the best approach yet: education. Secretary of State Hillary Rodham Clinton, who requested the U.S. Intelligence report on water security, has also recently announced the launch of the <u>U.S. Water Partnership</u>, a gathering of 28 public and private organizations to discuss and share their expertise on water management with various countries.

"U.S. Intelligence Warns that Global Water Shortage May Lead to War in the Future", 04/04/2012,online at: http://greenanswers.com/news/279862/us-intelligence-warns-global-water-shortage-may-lead-war-future

BACK TO TOP

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# Water conflict

#### Potential water war only 10 years away

An intelligence report released in the United States last week largely confirmed earlier warnings that unsustainable global fresh water supplies could lead to international conflict in decades to come. As the world celebrated *World Water Day* last week, both the US and South African governments gave indications of their intention to involve the private sector in resolving existing and developing water challenges.

Two weeks ago, we <u>reported</u> the Organisation for Economic Co-operation and Development (OECD) warned in its report titled "<u>Meeting the Water Reform Challenge</u>" *that*, globally, water management needs urgent reform if the world were to prevent serious deterioration in the quality and quantity of water available by the middle of this century.

Demand for fresh water is projected to increase by 55% by 2050. There is bound to be increased competition for water, and by that stage it is projected that more than 40% of the globe's population is likely to be living in river basins facing severe water stress, the report stated.

n a report last week by the US Office of the Director of National Intelligence, the date of the impending crisis has been moved a decade earlier to 2040, with the possibility of a *water war* only 10 years away.

Fresh water supplies are unlikely to keep up with global demand by 2040, increasing political instability, hobbling economic growth and endangering world food markets, according to this *US intelligence assessment*.

The report adds that areas including South Asia, the Middle East and North Africa will face major challenges in coping with water problems that could hinder the ability to produce food and generate energy.

While it estimates a 'water war' is unlikely in the next 10 years, the report also states that the risk of conflict will grow – with global water demand likely to outstrip current sustainable supplies by 40% by 2030.

"Beyond 10 years, we did see the risk increasing," a senior US intelligence official told reporters. He added that in the past, water disputes have contributed to tensions between rivals including nuclear-armed India and Pakistan, Israel and Palestine, as well as Syria and Iraq.

The report states that the use of water as a weapon or to further terrorist objectives will become more likely, noting that vulnerable water infrastructure was a tempting target.

Like the OECD report, the US intelligence assessment warns that water shortages and pollution are likely to harm the economic performance of important US trading partners, among others by limiting the use and development of hydropower – an important source of electricity for developing countries.

#### Agriculture

From all assessments and comments – also by South African government role-players – it is clear the agricultural sector will receive special attention in efforts to meet the water challenge.

The US intelligence report recommends that improved water management and investments in water-related sectors such as agriculture, will afford the best solutions for water problems. It further points out that since



agriculture consumes about 70% of the global fresh water supply, technology that reduces the amount of water needed to grow crops will offer the greatest potential for relieving the water scarcity.

Experience shows that the reform of agricultural support can encourage more efficient water use through changes in farming techniques and crop patterns, states the OECD report. Unless water management is reformed, increased flows of nitrogen, phosphorus and pesticides from agriculture and poor wastewater treatment will contaminate groundwater, rivers and oceans, harming human health and the environment, the report adds.

According to the US intelligence report, during the next 10 years the over-pumping of groundwater supplies in some agricultural areas will pose a risk to food markets and cause social disruption if mitigating steps such as drip irrigation and improved agricultural technology are not implemented.

#### **Private sector**

On World Water Day, US Secretary of State Hillary Rodham Clinton signed a memorandum of understanding (MoU) with the World Bank, and at the same occasion announced a new US Water Partnership (USWP). The USWP is a public-private partnership formed to share US knowledge, leverage and mobilise resources, and facilitate cross-sector partnerships to find solutions to global water accessibility challenges, particularly in the developing world.

The MoU between the US and the World Bank is aimed at strengthening support to developing countries seeking a water-secure future.

Also on World Water Day, South African Minister of Water Affairs Edna Molewa indicated the government will be seeking the assistance of the private sector to meet some of the country's water challenges. This is in an effort to help the government close the prevailing funding gap to implement projects to deal with the serious acid mine drainage (AMD) problem being experienced across the Witwatersrand Basin.

She said it is estimated that R924-million is needed to implement a short-term AMD solution for the region, but that even more resources will be required for a comprehensive long-term solution. However, the National Treasury had made available only R433-million in this year's Budget. Therefore, the departments of Water Affairs and Mineral Resources would explore the possibility of testing the 'open market' for input into finding a sustainable solution.

"Water conflict", 02/04/2012, online at: http://www.leadershiponline.co.za/articles/environment/1887-water-conflict

BACK TO TOP



# \* National Security Assessment: Water Scarcity Disrupting U.S. and Three Continents

In a new report, the U.S. State Department finds a global confrontation between growing water demand and shrinking supplies, in addition to predictions for the next 30 years of water security.

The world's demand for fresh water is growing so fast that, by 2030, agriculture, industry, and expanding cities on three continents will face such scarce supplies that the confrontation could disrupt economic development and cause ruinous political instability, according to the first U.S. cabinet-level report on the global water crisis.

The report, "Global Water Security," prepared for the State Department by the National Intelligence Council, found that, unless there are serious changes in conservation and water use practices, global water demand will reach 6,900 billion cubic meters (1,800 trillion gallons) annually by 2030, a figure that is about 2,400 billion cubic meters (634 trillion gallons) higher than today. The authors of the report concluded that level of consumption is "40 percent above current sustainable water supplies," and will "hinder the ability of key countries to produce food and generate energy, posing a risk to global food markets and hobbling economic growth."

In other words, this would be the equivalent of adding four Chinas over the next 18 years, <u>since</u> <u>China currently uses around 600 billion cubic meters (158 trillion gallons) of water annually.</u>

These and other findings about global water supply were made public on World Water Day, March 22, by U.S. Secretary of State Hillary Clinton, who called the study "a landmark document that puts water security in its rightful place as part of national security."

"It's not only about water," she added. "It is about security, peace, and prosperity."

But those goals are imperiled, according to the report, by the collision of two powerful global trends. The first is what the report called "key drivers of rising freshwater demand" — population growth, expanding cities, rising energy demand and production. The second is declining supply caused by deforestation; pollution; leaks and waste; and climate change that is melting glaciers, speeding evaporation, deepening droughts, and increasing the number of extreme weather events.

In remarks at the World Water Day event in Washington, D.C., Clinton introduced a new government initiative to improve global water management and conservation, steps that the report's authors repeatedly called for in the study. The U.S. Water Partnership, she said, brings together 28 organizations — including government agencies, philanthropic foundations, environmental groups, corporations, and universities — and their body of water knowledge, which will be spread globally through training sessions, web-based data libraries, and collaborations with any organization looking for solutions.

"You can't work on water as a health concern independently from water as an agricultural concern," Clinton said. "And water that is needed for agriculture may also be water that is needed for energy production. So we need to be looking for interventions that work on multiple levels simultaneously and help us focus on systemic responses."



#### What The Report Says

The Global Water Security report confirms much of the data about the severity of the world water crisis, as well as many of the conclusions about how to solve it that have been developed by research groups, by other lower level U.S. government offices, and by news organizations — among them Circle of Blue, whose photographs of the crisis from around the world were featured at the State Department event.

"National Security Assessment: Water Scarcity Disrupting U.S. and Three Continents", Brett Walton, 03/04/2012, online at: <u>http://www.circleofblue.org/waternews/2012/world/national-security-assessment-water-scarcity-disrupting-u-s-and-three-continents/</u>

#### BACK TO TOP



# \* Nor any drop to drink

THE southern provinces on Lebanon's border with Israel fare worse than the rest of the country by most measures. Water is one thing in short supply. Swathes of fertile farming land sit idle. Officials say the lack of water is partly to blame for the region's underdevelopment. While Lebanon as a whole has water in abundance, the south's rivers are shared with Israel which gets the lion's share. This is nothing new, but a new study has sketched out the extent of the imbalance for the first time.

Rivers that straddle borders have long caused tensionns in the Middle East. International law says that the useable water should be divided into "equitable and reasonable" portions according to such factors as population. But this directive is often overruled by bilateral agreements. These are lawful but often outdated—and the more powerful country usually gets the better deal.

The tributaries of the upper Jordan river, however, which straddle Lebanon, Israel and the Golan Heights, remain unregulated. During its occupation of southern Lebanon from 1982 to 2000, Israel controlled the territory's water. But while Lebanon now controls most of its own land, Israel still controls the sources of two of the three tributaries and gets most of the water. A study by AFIAL, a Beirut-based organisation, and researchers at the University of East Anglia has now pinpointed the assymetry of the division. Lebanon uses approximately 1% of the 350m to 550m cubic metres that flow each year, with the rest going to Israel (Syria, which has no control over its territory where the rivers lie, gets none). On equitable shares, Lebanon should get 15%, according to an estimate by one water expert.

It is unclear if the report's findings will have any effect. The paper was circulated at February's World Water Forum, an annual get-together of hydrophiles, and some Lebanese politicians, including the president, Michel Suleiman, have copies. Hizbullah may wade in, too. Hassan Nasrallah, the head of the Shia political party-cum-militia which currently controls the government and is anxious to look after its support base in the poor south, mentioned trans-boundary water no less than five times in his victory speech after the 2006 war with Israel.

In 2002 when Lebanon built a pumping station on the Hasbani, one of the three tributaries, international mediators had to step in to calm threats of war with Israel. With the region in turmoil and with rainfall plentiful, a serious water fight is unlikely at present. But in calmer times, that may change.

"Nor any drop to drink", 02/04/2012, online at: http://www.economist.com/blogs/newsbook/2012/04/water-middle-east

BACK TO TOP



# Solution Valley team hopes to abate climate change

Adhering to the "resources know no borders" concept, experts involved in a multinational, decade-long Jordan Valley hydrological project hope that their research will not only help preserve the area's ecosystem but also promote future regional cooperation through science.

"Any management that we're doing in one country will affect the other," said Prof. Katja Tielbörger, scientific director of the Global Change in Hydrological Cycle: Jordan River (GLOWA JR) project. "It's nice to develop strategies of climate adaptation, but eventually they might end up really inefficient because they're not coordinated with the neighbor."

Tielbörger spoke on Sunday at "Science and the response to climate change in Israel," the first in a two-day conference sponsored by the GLOWA JR project, Tel Aviv University's Porter School of Environmental Studies and the Israel Palestine Center for Research and Information.

The conference signaled the coming end of the 11- year interdisciplinary and international research venture, which has aimed to provide scientific support for sustainable water management in the Jordan River area.

At the conference, experts and stakeholders involved with the program were to discuss the results from the past decade of water management analysis as well as the aftermath of the project.

The project has been financed by the German Federal Ministry of Education and Research as part of the larger GLOWA research initiative.

While the team working on the project includes members from Germany, Israel, Jordan, the Palestinian Authority and other locations, the Department of Plant Ecology of the University of Tübingen, in Germany coordinated the project. The Israeli members, who include professors and researchers from all over the country, have been led by Prof. Alpert Pinhas, the head of the Porter School of Environmental Studies.

The third and current phase of GLOWA JR began in January 2009, and the project will officially conclude this June.

The Israeli team produced all kinds of models, examined trends and conducted sub-projects across a variety of sectors. For example, the researchers found that from 2010 to 2050, there will be an approximate increase in mean summer temperatures of up to 3 degrees, an increase of mean annual temperatures of up to 2 degrees, and a decrease of annual mean precipitation



in range of 10 to 20 percent in the Jordan River region, according to Pinhas. Meanwhile, the occurrence of extreme weather events would rise, he said.

Models for biodiversity showed that hydrological changes would not have quite so dramatic an impact on the region's natural ecosystem, according to Tielbörger.

By setting up experimental areas of drought conditions in normally wet areas and supplementing rainfall in typically dryer areas, a Tel Aviv University Molecular Biology and Plant Ecology Department team was able to see how communities might respond. Prof. Marcelo Sternberg confirmed that the vegetation mostly appeared to be resilient to the induced climate changes. However, these changes were continuous, induced over several years, and Sternberg warned that an increase in extreme events might not yield the same results.

In the case of the region's animals, however, researchers warned that both climate change and land transformation will cause species to shift their distributions to the west and northwest.

As more and more evaporative water loss occurs, the activities of the species will be more and more limited, according to Prof. Tamar Dayan of the zoology department at Tel Aviv University's Faculty of Life Sciences.

To ensure that the species will remain intact in the region, all three governments will need to employ changes in their environmental policies and practice, some of which may be very costly, Dayan said.

"This is a place where there is a lot of room for regional cooperation," she said. "Ecosystem services are increasingly a common currency in the international quest for environmental sustainability."

Germany is just the country to help move this cooperation along, Tielbörger said.

Collaborations have already become a "significant side effect" of the decade-long program, which has led to both "confidence- building" and "a genuine trilateral dialogue," according to Tielbörger.

During the last stakeholder workshop held in Germany, participants from all the countries expressed interest in establishing a regional center for integrated water resource management under climate change, as a result of the project, she said.

Now, the German Federal Ministry of Education and Research may be interested in funding



such a center, and in September will meet with regional decision-makers in Istanbul for a final evaluation, issuing a decision by December.

"Germany is willing to function as a catalyst but they're not willing to fund the initiative to time immemorial," Tielbörger said. "In the long run this needs to be funded by the regional governments."

"Jordan Valley team hopes to abate climate change", 02/04/2012, online at: <u>http://www.jpost.com/Sci-Tech/Article.aspx?id=264418</u>

#### BACK TO TOP



# Solution the solution for Israel's water problems? Depends who you ask

Desalination systems account for a fifth of the freshwater used in Israel and, according to existing plans, by the end of the decade that amount will be doubled. By Zafrir Rinat

Increasing desalination can improve water quality and save the economy some NIS 500 million a year, according to a new survey commissioned by the Israel Water Authority. Experts from the Environmental Protection Ministry, however, believe desalination plants' costs outweigh their benefits.

Desalination systems account for a fifth of the freshwater used in Israel and, according to existing plans, by the end of the decade that amount will be doubled. Recently the Water Authority commissioned an economical value survey through Adan Technical & Economic Services.

The study focused on the benefit of decreasing the amount of salt and scale in desalinated water, since until recently the amount of scale in groundwater supplied to customers was high. The study inspected the quality of water supplied to Tel Aviv and Jerusalem, who have recently received desalinated water distilled with other sources.

According to the study, the amount of salt and scale in the water decreased by 25 percent in the past five years, and a further 30-40 percent decrease is expected within three years, when the desalination plant being built south of Rishon Letzion will become operative.

The main benefit to households is the energy saved as a result of less scale in the pipes, and expenses saved for energy that otherwise would have been spent on reducing scale. As for agricultural use, lower salt levels would increase the crop.

All in all, the study estimates that the total economical benefit would be NIS 0.45 per metric cube. Today the cost of a metric cube of desalinated water is NIS 2-3, and the total yearly benefit would be NIS 185 million, eventually reaching an annual sum of NIS 500 million.

Adan's study did not take into account further possible benefits, such as the lack of dangerous cancerous chemicals in the water, or pollution by residues of medicines and hormones. Another benefit would be the longevity of household electric appliances following the decrease in scale.

On the downside, desalinated water does not include magnesium, which has many health benefits and exists in water from other sources. The government recently decided not to add magnesium to the water system due to prohibitive costs.

The results of the study are expected to strengthen the existing trend in the Water Authority, which tends to support further desalination. However, a steering committee dealing with climate change in the Environmental Protection Ministry recently presented a different and critical view.



The ministry has, so far, refused to publish the complete report by the committee, which consisted of water and environmental experts, but several of its conclusions were presented last month in a University of Haifa convention dealing with climate change.

Prof. Nurit Kliot, one of the members of the ministry's climate change steering committee, said that the committee did not specify desalination systems as a preferred policy move. "These systems produce large amounts of water, but their benefits do not justify their high costs – including the environmental costs, which nowadays aren't taken into consideration," Kliot said.

While she failed to specify the costs, it is assumed that Kliot was referring to the fact the systems occupy much coastal space, use a lot of energy and emit to the sea huge concentrates of salt and chemicals used during the desalination process.

Kliot recommended that the amounts produced by desalination should be determined every so often according to the varying conditions and needs. The committee is set to recommend steps encouraging water preservation, prevention of leaks, purification of polluted wells and use of gray water (which is already done in some 30 countries ).

Kliot also mentioned purification of sewage and planning of building sites in a way that would allow rainwater to seep in. The committee estimates that these steps could save some 100 million cubic meters a year, and probably even more.

"Is desalination the solution for Israel's water problems? Depends who you ask", Haaretz, 01/04/2012, online at: http://mideastenvironment.apps01.yorku.ca/?p=4695

BACK TO TOP



#### Kinneret water level highest in 9 years

The water level of the Kinneret rose a further 83 centimeters in March to 211.5 meters below sea level, and 2.70 meters below the upper red line. The water level has risen by 1.86 meters since the start of the winter rainy season on October 1.

The volume of available water in the Kinneret reached 147 million cubic meters in March, well above the multiyear average for the month, and the highest in nine years.

According to the Water Authority, at the end of the rainy season, the Coastal Aquifer's water volume is 32 million cubic meters of water above the red line, but it still has a shortfall of 1.26 billion cubic meters; the Yarkon-Taninim Aquifer's volume is 107 million cubic meters of water above the red line, but it still has a shortfall of 343 million cubic meters; and the Kinneret's volume is 137 million cubic meters of water above the lower red line, but it still has a shortfall of 578 million cubic meters.

The total water volume in Israel's three primary water sources is 276 million cubic meters, but there is still a shortfall 2.18 billion cubic meters. The water level in many parts of the southern and central Coastal Aquifer is still below their red lines.

As of early April, precipitation was 103% of the multiyear average. Rainfall over the Kinneret basin was 107% of the multiyear average, it was 110% of multiyear average in the western Galilee, 106% of multiyear average over the Coastal Aquifer, and 98% of multiyear average over the Yarkin-Taninim Aquifer.

Israel's total available water is 369 million cubic meters, well above the multiyear average.

The water level of the Dead Sea continues to fall, however, reaching 425.8 meters below sea level on April 1, six centimeters lower than a month earlier, and 72 centimeters less than at the beginning of the year.

"Kinneret water level highest in 9 years", 05/04/2012, online at: http://www.globes.co.il/serveen/globes/docview.asp?did=1000739536&fid=1725\_

BACK TO TOP



#### Wastewater that now goes to waste will soon irrigate Negev farms

The Mekorot water company will invest half a billion shekels to bring large quantities of treated wastewater to Negev farmers. In order to do that, Mekorot will put back into service a pipeline to the eastern Negev that has not been used since the 1970s. The old pipeline was used to carry freshwater to Negev communities before the National Water Carrier reached the area.

The upgraded pipes will transmit 100 million cubic meters of treated sewage, which will irrigate some 250,000 dunams (about 62,500 acres ) of crops in the central and western Negev. That's 40% of the amount of water Mekorot provides the farmers today. Currently, most of the crops in the Negev are irrigated with wastewater from cities in the Tel Aviv region that is purified at the Shafdan treatment plant, but there is no longer enough of that water to go around.

Work on the project will start next year. It will be paid for from a fund for developing water infrastructure, from a special levy in all water bills, not just agriculture.

The sewage for the project will come from towns in the south and center. Most of this sewage now flows into the Mediterranean Sea, though some enters the underground water table and can pollute groundwater, and some is used locally by farmers for irrigation. Mekorot says the local farmers will not be hurt, as they will also be provided with wastewater, once the sewage treatment plants increase their capacities.

The plants will clean the water to the highest possible level, called tertiary treatment, and will be appropriate for all crops, including citrus groves, field crops and vegetables. The huge expenditure is not one of the largest in recent years for water infrastructure, but is expected to pay off for Israel. The project will free up 50 million cubic meters of freshwater now used for irrigation for household use. This will make it unnecessary to build a new desalination plant.

"Wastewater that now goes to waste will soon irrigate Negev farms", Haaretz, 06/04/2012, online at: http://mideastenvironment.apps01.yorku.ca/?p=4751

BACK TO TOP



#### **Solution** Israeli authorities flout court order to provide Bedouins with water

UMM AL-HIERAN, NEGEV DESERT (IRIN) - Salim Abu al-Qian's family live in the <u>Negev/Naqab</u> desert in the "unrecognized" <u>Bedouin</u> village of Umm al-Hieran, nine kilometers from the nearest source of clean water.

"There is no water in the village. We truck it in. It costs about 50 shekels [\$13.40] per cubic meter of water," explained the 53-year-old village leader. "There is a pipe that's about eight kilometers long, but it's too old, and the planning authorities don't allow us to put a new one under the ground. We are asking for better access to water, a new pipe that should be close to the village."

The Israeli authorities forced Umm al-Hieran residents to move to the area where the village now sits in 1956, shortly after the military had evicted them from their original homes in the Wadi Zuballa area of the Negev.

In 2004, the villagers faced a new threat of expulsion, as the Southern District Planning Committee unveiled a master plan which involves once again displacing Umm al-Hieran, and building the Jewish community of Hiran in its place. According to the Israeli government, the 500 residents of Umm al-Hieran are trespassers who are illegally squatting on state land.

Between 80,000 and 90,000 Bedouin citizens of Israel live in <u>unrecognized villages</u> in the southern Negev, according to a report by the <u>Association for Civil Rights in Israel</u>. As a result of their unrecognized status, nearly every structure in these communities can be demolished at any time, and residents do not receive basic services from the state, including electricity, paved roads, healthcare facilities, schools and water.

# Water a basic right

In June 2011, however, the <u>Israeli high court</u> ruled that the right to water was a constitutional right, and that the state must guarantee a "minimum access to water" for the residents of the unrecognized villages. Still, the court did not specify what constituted a fair minimum.

Shortly thereafter, a Haifa court, acting as a water tribunal, rejected Umm al-Hieran's application to be connected to the local water network. The court argued that the villagers had minimum access to water, and suggested they buy water from private citizens in towns connected to the water network, or move into nearby government-planned Bedouin townships.

According to <u>Sawsan Zaher</u>, an attorney at <u>Adalah</u> - the Legal Center for Arab Minority Rights in Israel, which has represented al-Qian's family and the residents of Umm al-Hieran in their legal struggle, the water tribunal's decision means that "a constitutional right, which is the right to water as part of the right to a minimal standard of living, [will] be provided by private actors and not by the state. This is in contradiction with constitutional law. The duty is on the state to fulfil this right and protect it even."



Adalah has filed an appeal to Israel's high court, asking that "minimum access to water" be explicitly defined, and challenging the constitutionality of forcing Umm al-Hieran residents to purchase water from private sources.

"Despite the fact that they are citizens, they are not entitled to the same level of rights as other citizens of Israel. Why? Because they are living in unrecognized villages," Zaher said.

#### "We want you to move out"

"The purpose is not hidden any more. It is revealed and it's very official: we are not connecting you to water because we want you to move out. This is the policy. It's a kind of punishment. This is in huge contradiction with human rights and logic and humanity — to come and punish people by not giving them water for political purposes," Zaher said.

In a 9 March report, the <u>UN Committee on the Elimination of Racial Discrimination</u> raised concerns about Bedouin communities in Israel, particularly with regard to Bedouin <u>home demolitions</u>, and inequalities between Bedouin and Jewish citizens' access to land, housing, education, employment and health services.

Israel's proposed Law for the Regulation of Bedouin Settlement in the Negev, which would forcibly displace 30,000-60,000 of the 80,000-90,000 Bedouins living in unrecognized villages, should be shelved, the UN Committee found, since it legalizes "the ongoing policy of home demolitions and forced displacement of the indigenous Bedouin communities."

According to Salim Abu al-Qian, forcibly displacing residents of Umm al-Hieran to the nearby government-planned Bedouin township of Hura is indeed the motivation behind denying them direct access to high-quality water.

"They want to push us to leave the village and to displace us," he said. "Even though we are an unrecognized village, this is nicer than to live in Hura. There are no services there. Sewage and garbage is in the street. There's not enough space. It's another refugee camp."

"Israeli authorities flout court order to provide Bedouins with water", 02/04/2012, online at: <u>http://electronicintifada.net/content/israeli-authorities-flout-court-order-provide-bedouins-water/11119</u>

#### BACK TO TOP


# Springwater flows in the West Bank, but who controls it?

Palestinians say settlers are taking over their springs and using them to develop tourist sites; settlers say they are merely preserving nature after decades of neglect.

The settlers have been investing special efforts of late to persuade the Israeli public to make its way to numerous tourism sites on the other side of the Green Line. Internet sites of regional councils in the territories and advertisements placed by various nonprofit groups are replete with stories about the wonders of gourmet restaurants, boutique wineries, farms producing high-quality cheeses, and especially the many springs in the region. Most of these springs have been used by Palestinian farmers over the years, but according to a new UN report, settlers are increasingly gaining control over them.

The report, released last month by the UN's Office for the Coordination of Humanitarian Affairs in the occupied Palestinian territories, says settlers in the West Bank have taken over dozens of springs in the past few years, sometimes using threats and intimidation to prevent the Palestinians from using them. The report notes that springs are the single largest source of water for irrigation in the West Bank and an important coping mechanism for communities not connected to a water network, or poorly supplied, to meet domestic and livelihood needs.

The report is based on a survey of springs conducted by Dror Etkes, former head of the Peace Now settlement-tracking project. According to the data, 30 springs are now under full settler control; another 26 are the target of settler activities that have put Palestinian access to the springs at risk. The highest concentration of springs are in the Mateh Benjamin regional council. Most of them are situated on privately owned Palestinian land in Area C, based on the Israeli Civil Administration's land ownership data.

# Renaming and reconstructing

Settlers have taken a variety of actions to develop tourism and leisure sites at 40 springs, in order to attract visitors. These activities include marking the spring with a new Hebrew name that, of course, bears symbolic importance by attributing the site to the Jewish heritage. After naming them, facilities are constructed, such as benches, picnic tables, and new pools for spring water collection. The report charges that this construction is being carried out without permits. There was one instance in which the Israeli Civil Administration demolished an unlawful pool at a spring near Elon Moreh, but it was later reconstructed.

Palestinians are quoted in the report as saying they are scared to get too close to the springs, because settlers use violence against them. The report also says security coordinators in the settlements have deterred Palestinians from accessing the springs.

OCHA representative Yehezkel Lein says the activity of the settlers prevents the Palestinians from using springs for their agricultural needs, and even from drinking, calling it part of an attempt to take over rural areas in the West Bank. He adds that converting the springs into tourism attractions is an attempt to normalize the settlements in the eyes of the Israeli public.



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

The Mateh Benjamin regional council has responded to these allegations, saying the activity at the springs is development, as well as reclamation and preservation of nature and heritage sites. "As part of this process, several stopped-up springs have been reclaimed and made into well-cared-for springs that are accessible to the public at large. An irrigation system has been built at some of them for herds of sheep." The council also says springs constitute active tourism sites for both Palestinian and Jewish visitors, adding that "after decades of neglect, it is now possible to see the development of tourism sites, which preserve nature and ensures environmental quality."

Still, the regional council does not forget to warn would-be visitors of the presence of Palestinians. The council's website features a list of springs that have become tourism sites, but directions for reaching one site includes this advisory: "Attention! Arab farmers are in the area. Please keep your eyes open!" In the signs it posted near the springs, the council did not see fit to note their names in Arabic or the traditional Arab names of the springs.

#### Two tales of one spring

One spring near the settlement of Eli provides a glimpse at the different versions offered by settlers and Palestinians. OCHA staffers recently visited the spring, called Ein Al Ariq by Palestinians, but renamed Ein Hagvura (Spring of Heroism ) by the settlers. Palestinians who joined the OCHA tour spoke of their fears at the settlers' presence at the spring, and how even the army forbids them from gaining access to the spring. "It is permitted to come here and pick olives only a few days a year," said Jamal Daraghmeh, head of the village council of Luban al-Sharqiya.

Eli security coordinator Amiad Cohen denies this claim, insisting, "I have never banished or prevented access to any Palestinian, and I have no control over the army's directives. You can see the olives here are well cared for, because the Palestinians come here. Jews like to look after things and make them beautiful. The Palestinians interpret this as a declaration of ownership over the area, and that is why they burn and destroy."

A response submitted by the Israeli Civil Administration to OCHA following the release of the organization's report stated, "All of the construction activity in Area C lands, such as improvement and betterment work on sites – including springs – necessitates construction permits. Any and every deviation is dealt with by us. As opposed to what is stated in the report, enforcement activity recently took place to counter unlawful construction at a spring near Elon Moreh, and to counter such construction at a spring near the settlement of Bracha. The right to reach springs in public lands is given to every individual. If there is any allegation of prevention of access by any person or agency, a complaint should be lodged with the police."

Meanwhile it looks like settlers will be getting aid from the government for their activities at these springs. At a meeting with the head of the Beit El local council three weeks ago, Environmental Protection Minister Gilad Erdan agreed in principle to transfer financial aid for the purpose of "development of water springs" from the ministry's approved river reclamation budget.

<sup>&</sup>quot;Springwater flows in the West Bank, but who controls it?", Haaretz, 06/04/2012, online at: <u>http://mideastenvironment.apps01.yorku.ca/?p=4753</u>



## SunGlacier could produce water from air in the Egyptian desert

Solar deep freeze may grace Egypt's sands

A Dutch artist intends to create a glacier in the Egyptian desert to inspire solar powered solutions to climate change.

Working from a climate controlled cube in The Hague in the Netherlands, Ap Verheggen and the company Cofely Refrigeration say they have completed tests that show it is possible to sustainably generate ice from desert water vapor.

They are now poised to begin engineering a 2,153 square foot (200 square meter) dune-spanning sculptural "leaf" dubbed the SunGlacier. Solar cells will power cooling condensers generating 20 square meters of ice in the shadow of the SunGlacier's underbelly.

"We are looking for a third party that is willing to help us bring this idea to realization," Verheggen told Egypt Independent. Although any hot dry desert setting would do, the 48-year-old career artist wants the project to go to Egypt. He has his heart set on a site next to the pyramids of Giza.

"I want to show the world that impossible projects — like the pyramids — are possible. And for the Egyptians to show the world that with a new society there is belief and inspiration for the future."

"If we can find an Egyptian partner that would be the world's best idea."

Laboratory results presented to world politicians and business leaders at March's World Water Forum in Marseilles generated "enormous feedback", Verheggen said.

Months earlier, in a climate controlled insulated chamber, Verheggen and his team had recreated the summertime conditions of Aswan in Upper Egypt. There the relative humidity is typically 22 percent and temperatures soar above 50C. An electric fan simulated desert winds. Despite the harsh conditions, they found that it took only a few minutes for ice to grow on an aluminum slab connected to a cooling machine. Eventually a 4-inch (10.16cm) thick layer of ice coated the slab.

By upscaling the laboratory design, the team has calculated that 200 square meters of solar panels would generate enough energy to produce at least 100kg of ice in the desert.

They have now embarked on building a 10-20 square meter scale model.

The key to appreciating how the SunGlacier works, says Verheggen, is to understand the difference between absolute and relative humidity. "If we look not to the relative but to the absolute figures, the Netherlands is drier than Egypt."

While absolute humidity gives the amount of water vapor in the air, relative humidity is this amount divided by how much water the air could possibly carry. This carrying capacity changes with temperature. The hotter the air the less water it can hold. The upshot is that two atmospheres with differing relative humidifies may each be storing the same amount of water vapor.



The SunGlacier effectively taps this humidity like a domestic anti-humidifier.

"On our planet we live in an ocean of water vapor," says Verheggen. "Even in the driest deserts. But you can't see it. The ocean of water could be a solution for the future to solve water problems."

Water shortages were the major topic of discussion at the World Water Forum. More than 40 percent of the world's population will live in areas of severe "water-stress" by 2050, a recent OECD study on global water challenges predicted.

The SunGlacier is not meant to be a solution to the world's water shortages, Verheggen says. "Our project is an art project. But with this art project we want to inspire people, organizations and industry. One of the most interesting projects is to make water with solar energy. Energy is normally stored in heat. Why not in cold? The project can give much inspiration for further research."

"I am somebody who believes that with the conventional techniques available today, we can find solutions that we never could dream of before."

The project has won support from the water training institute of the United Nations, UNESCO-IHE, for which Verheggen is a cultural ambassador.

Verheggen conceived the idea following a trip to the West Greenlands for the prequel to SunGlacier, the cool(E)motion art project.

In June 2009 the project — led by Verheggen — placed two large sculptures on icebergs in the bay of Uummannaq, West Greeland. An internet audience followed the GPS signals of devices attached to the sculptures as the icebergs sailed the Baffin Sea offshore West Greenland. The project had calculated that in typical conditions the icebergs would survive 3-4 years. But after only two months they vanished into the 'warm' waters of Uummannaq bay. The GPS signal went silent.

"SunGlacier could produce water from air in the Egyptian desert", Egypt Independent, 06/04/2012, online at: <u>http://mideastenvironment.apps01.yorku.ca/?p=4741</u>

BACK TO TOP



#### **\*** World Bank grants 8 million USD to improve Mekong resources management

VIENTIANE, April 5 (Xinhua) -- The World Bank has committed more than 63.7 billion kip (about 8 million U.S. dollars) to the Mekong River Commission (MRC) to promote trans-boundary management of regional river resources.

While there are not any current trans-national water resource issues between the Mekong River countries, the agency wished to act to prevent any from cropping up in the near future, an official at MRC Vientiane Office told Xinhua on Thursday.

MRC's Chief Executive Officer Hans Guttman and World Bank Country Director for Southeast Asia and Mongolia Annette Dixon on Wednesday signed the financial support agreement in Vientiane.

This is the five-year support scheme running from 2012 to 2017 aiming to facilitate dialogue and the implementation of pilot activities that address key trans-boundary water resource management issues in the lower Mekong basin, which is home to about 60 million people.

The official also said the funding will be used to increase dialogue, cooperation and understanding on integrate water resources management principles among the lower Mekong countries that are members of the MRC -- Cambodia, Laos, Thailand and Vietnam.

It will also help to establish a body to coordinate environmental impact risk and disaster risk management.

The cooperation between the World Bank and the MRC is expected to serve as an example of how the two can work to implement quality, integrated water management practices in the lower Mekong basin at the regional, national and sub-national levels.

The Mekong River, the world's 12th longest and the seventh longest river in Asia, flows through six countries -- China, Myanmar, Laos, Thailand, Cambodia and Vietnam.

"World Bank grants 8 million USD to improve Mekong resources management", 04/05/2012, onlinw at: http://news.xinhuanet.com/english/world/2012-04/05/c\_131509127.htm?utm\_source=Circle+of+Blue+WaterNews+%26+Alerts&utm\_campaign=e6af8efe72-RSS\_EMAIL\_CAMPAIGN&utm\_medium=email

BACK TO TOP



## Vietnam makes important contribution to ASEAN

Hanoi, April 5 (VNA) - Vietnam has made important contributions to implementing ASEAN priorities and strengthening regional connectivity at the 20th ASEAN Summit and ministerial meetings.

The statement was made by Foreign Minister Pham Binh Minh in an interview granted to the press on April 4 as Prime Minister Nguyen Tan Dung and the high-ranking Vietnamese delegation left Phnom Penh, Cambodia, after attending the 20th ASEAN Summit and related meetings.

At the meetings, the Vietnamese delegation made proposals on strengthening consensus among the group on building the ASEAN Community based on three pillars: politic-security, economic and socio-cultural pillars, and heightening the "culture of implementation" to effectively carry out the roadmap to the ASEAN Community by 2015 and the master plan on ASEAN connectivity, Minh said.

Together with other ASEAN countries, Vietnam emphasised that the group needs to effectively promote tools and mechanisms for politic-security cooperation in the region such as the Treaty of Amity and Cooperation (TAC), the Southeast Asian Nuclear-Weapon-Free Zone (SEANWFZ), the Declaration on the Conduct of Parties in the East Sea (DOC), the ASEAN Regional Forum (ARF) and the ASEAN Defence Ministers' Meeting plus (ADMM+), thus contributing to promoting peace, security and cooperation in the region.

Vietnam supported the increase of ASEAN coordinated stance at international forums and proposed to institutionalise ASEAN's participation in G20, he added.

On the East Sea issue, Vietnam underlined that ASEAN needs to unite, be active in promoting peace, stability, security and maritime safety in the East Sea, solve disputes through peaceful measures, respect international laws, especially the 1982 UN Convention on the Law of the Sea and fully implement the DOC, the Foreign Minister said.

The group should complete components of the Code of Conducts (COC), serving the start of consultations on the COC between ASEAN and China.

Regarding the Mekong River, Vietnam stressed the necessity for tapping and using Mekong water resources in a proper and sustainable manner for the benefits of people and sustainable development of countries along the river, particularly lower-basin countries.

#### BACK TO TOP

<sup>&</sup>quot;Vietnam makes important contribution to ASEAN", 05/04/2012, online at: http://www.mcot.net/cfcustom/cache\_page/350079.html



# China Drought 2012: Three-Year-Long Dry Spell Continues in Southwest

## **Drought in China Enters Third Year**

A devastating drought in southwestern China's Yunnan province is entering its third year.

The drought has already affected more than 6.3 million people; 2.4 million have difficulty finding access to drinking water.

Southwestern China's agricultural industries have also been critically affected and have already lost approximately 2 billion yuan (\$317 million).

Farmers have had to switch to more resistant crops, but this has not alleviated many of the problems created by the drought. Families in some regions must turn to transporting water from more than 10 kilometers (6 miles) away.

China has long been affected by desertification in the northern and western regions, but the drought in Yunnan marks a new high in China's troubles with the climate and environment.

#### Water Scarcity

Although China has approximately 20 percent of the world's population, it has access to only 7 percent of the globe's freshwater resources.

Eleven of China's 31 provinces and administrative regions have roughly the same level of access to water resources as the Middle East. Inhabitants there get less than 1,000 cubic meters per year.

Urbanization and economic growth will continue to put new stresses on the availability of water in China. Manufacturing, power generation, infrastructure construction, urban lifestyles, and increased food and goods consumption all lead to increased stresses on limited water supplies, leading to further scarcity.

"China Drought 2012: Three-Year-Long Dry Spell Continues in Southwest", 05/04/2012, online at: http://www.ibtimes.com/articles/324697/20120405/drought-yunnan.htm

#### BACK TO TOP



# Growing Food Demand Strains Energy, Water Supplies

The northern region of Gujarat State in western India (<u>map</u>) is semi-arid and prone to droughts, receiving almost all of its rain during the monsoon season between June and September.

# But for the past three decades, many crop and dairy farms have remained green—even during the dry season.

That's because farmers have invested in wells and pumps, using massive amounts of electricity to extract water from deep aquifers. The government has artificially propped up the agricultural sector through power subsidies and price supports.

The pumping hasn't occurred without dire environmental impacts. Groundwater tables have fallen precipitously, 600 feet below the ground in some places, requiring even more powerful pumps to bring water to the surface. Over-consumption has taxed the power grid, constraining the electricity available for others.

#### **Rising Thirst for Energy on Farms**

North Gujarat is a <u>well-documented</u>, extreme example of groundwater depletion and an unsustainable agricultural sector. But there are many other hot spots in places such as India, China, and the Middle East where energy demands are rising so enough water can be pumped to produce food. In essence, experts warn, agriculture in those areas is in peril because of its unsustainable relationship with energy and groundwater.

#### (Related: "Solar Energy Brings Food, Water and Light to West Africa")

Potential impacts include not only dry aquifers and failing farms, but increased soil salinity and carbon dioxide emissions. Climate change exacerbates the situation. Poor farmers often are hit the hardest, because they can't afford to invest in expensive technologies to drill wells and pump water from them.

"I think what is forgotten—the farmers themselves [in Gujarat] are facing constraints," said Vijay Modi, a professor at the <u>Columbia Water Center</u>, part of Columbia University's Earth Institute. "This is their livelihood, so figuring out a way that is a win-win-win for the farmer and the utility and the environment is key."

Modi said there is reason for concern, but he believes the problem can be fixed.

The challenge for Gujarat and other areas lies at what is commonly known these days as the waterenergy nexus. Broadly speaking, the term refers to the ways in which water and energy resources are interdependent.

(Related Quiz: "<u>What You Don't Know About Water and Energy</u>")



The goal is to find solutions to the constraints of both—to optimize resource use and eliminate the "slack," or inefficiencies in the system, said Holger Hoff, senior research fellow at the <u>Stockholm</u> <u>Environment Institute</u> (SEI), an independent international research institute.

The knowledge largely is there, "but implementation is very difficult," Hoff said, given the long history of the energy and water sectors, as well as various government ministries, sticking within their own silos rather than working together.

Meanwhile, as world population burgeons, demand for resources continues to rise. Agricultural production will need to increase by about 70 percent by 2050, and primary energy by 50 percent by 2035, barring significant changes to the way food and energy are produced and consumed on the planet, according to an SEI briefing paper and <u>data by the U.N. Food and Agriculture Organization</u>.

#### An Unsustainable Trend

In China, the use of groundwater to irrigate crops has grown more than tenfold since 1950, <u>according</u> to research released in March by the University of East Anglia in England. The researchers estimated that pumping systems—operating from an average depth of 230 feet (70 meters) in some areas— emitted more than 30 million tons of carbon dioxide a year, roughly equivalent to the amount emitted in all of New Zealand every year. The researchers blamed the massive expansion of groundwater pumping on cheap energy and improved access to pumping technology.

In India, the largest groundwater user in the world, agricultural electricity consumption increased more than 25-fold between 1970 and 2009, more than twice the pace of overall electricity consumption, according to government figures.

(Related: "India Maps Out a Nuclear Power Future, Amid Opposition")

New research by the <u>International Water Management Institute</u> characterizes nine states in India, including Gujarat, as having "critical" groundwater condition, where pumping exceeds the long-term recharge of the aquifers.

"Agriculture, groundwater and electricity sectors in much of India are now bound in an invidious nexus of mutual dependence where the growth of one sector (agriculture) is being supported by unsustainable trends in the other two sectors (groundwater and electricity), so much so that even growth in agriculture is now threatened," wrote IWMI senior researcher Aditi Mukherji in Delhi.

The phenomenon is driven by the use of millions of electric pumps that run on cheap power. Farm power subsidies in India are estimated at \$9 billion annually, up from \$6 billion a decade ago. In Gujarat, tariffs have been raised over the years, but farmers still pay only about 20 percent of the true cost of electricity, according to Modi of the Columbia Water Center.

Jon Strand, senior economist for the World Bank's environment and energy team, said in a <u>policy</u> <u>research working paper</u> that the optimal scheme to combat aquifer depletion would be tariffs that cover the full cost of electricity, with an extra charge to cover the "external cost" of groundwater



pumping. That refers to the additional electricity costs to bring groundwater to the surface as water tables fall because of over-pumping.

"When a groundwater basin is exploited by a large number of farmers, acting independently, each farmer has little incentive to practice conservation that would primarily benefit other farmers," Strand wrote.

India's government is in the process of revising its national water policy, and a draft recommends changing the "heavy under-pricing of electricity" to more closely reflect actual costs. But if farmers in north Gujarat paid for the full cost of their electricity, the agricultural sector wouldn't be economically viable, according to Columbia Water Center.

#### Stemming the Flow

In north Gujarat, changes have occurred, although it may be too early to draw firm conclusions.

A decade ago, the region was marked by rapidly depleting aquifers, a nearly bankrupt utility, and an agricultural lobby strong enough to fight efforts to meter electricity. Electricity theft and unreliable power were issues.

Researchers at the International Water Management Institute <u>recommended a scheme</u> to supply uninterrupted power on a rationing schedule designed to match the supply to irrigation needs as closely as possible.

The state government of Gujarat acted on IWMI's recommendation by investing about \$260 million for separate electrical feeder lines for farming and non-farm uses. While that may seem like a wasteful investment to make, the "Jyotigram Yojana" or "Lighted Village" initiative met the government's goal of developing rural electrification to stimulate the region's economy. The feeder lines also were metered to curb theft.

(Related: "Smart Meters Take a Bite Out of Electricity Theft")

"While the economics of the Jyotigram program is unclear, it is certainly smart politics," Madar Samad, IWMI principal researcher for water policy and institutions, said of the investment to split the electricity lines.

The scheme made it possible for farmers to keep to certain irrigation schedules and, at least theoretically, conserve water depending on how much they pumped during the rationing period.

Gujarat experienced 9.6 percent annual growth in its gross domestic product from agriculture between 2000 and 2007—the highest in India—compared with less than 3 percent for India as a whole, according to a joint publication by IWMI and the International Food Policy Research Institute.

But groundwater continues to be depleted, and the Institute for Resource Analysis and Policy in Hyderabad, India, countered that the growth was more the result of a strong recovery from a "major



dip" in production that had occurred during droughts of 1999 and 2000. The institute argued that the "real growth" in agricultural production in Gujarat already had occurred between 1988-1999.

Additional efforts are being made to improve the groundwater situation in Gujarat. The Columbia Water Center, for example, has been advising a local utility and government on <u>a pilot project</u> that meters water and energy use (meters are attached to wells) and rewards farmers who cut consumption to a certain historical baseline. The project, which started last year, also helps farmers identify ways to save water, such as using tools to measure moisture content in soil, drip irrigation, and planting crops more suitable to the area. More than 800 farmers have agreed to be part of the project.

Preliminary results are encouraging, but Modi of the Columbia Water Center is cautious. He said that before conclusions are reached, the project must measure rigorously the energy use of a larger group of farmers over multiple years. That's now under consideration by the utility.

Hoff of the Stockholm Environment Institute and Potsdam Institute for Climate Impact Research also is cautious when it comes to solving such water-energy nexus issues as groundwater depletion. He recently attended the <u>Planet Under Pressure</u> conference in England where, he said, one message was that there's about a 10-year window of opportunity to deal with some of these problems.

He said he wants to be optimistic, but "my experience tells me that action only happens if things become urgent."

"Growing Food Demand Strains Energy, Water Supplies", Jeff Smith, 06/04/2012, online at: http://news.nationalgeographic.com/news/energy/2012/04/120406-food-water-energy-nexus/

BACK TO TOP



## Concerns over India rivers order

Supreme court order in India asking the government to link more than 30 rivers and divert waters to parched areas has sparked concerns in neighbouring countries.

Bangladesh says it would be hardest hit because it is a downstream country to two major rivers that flow from India.

New Delhi is yet to respond to the neighbouring countries' reactions.

The multi-billion-dollar project was announced by the Indian government in 2002 but had since remained on paper.

Experts in Nepal say the country's unstable political situation could open the door for India to build dams and reservoirs in Nepalese territory for the inter-linking project - known as the ILR.

Hydrologists say as an upstream country, Nepal has ideal locations for the infrastructure required to make the mammoth Indian project happen.

Bhutan too has similar locations and some of its rivers are tributaries to the Bramhaputra, a major river system in the region included in India's river-linking project.

Long-running disputes

The project's basic idea is to take water from areas where authorities believe it is abundant and divert it to areas where there is less available for irrigation, power and human consumption.

Official Indian documents have stated that the country - with its population of 1.2 billion - is increasingly water-stressed.

But when the government tried to present the ILR as a possible solution, it became quite controversial as critics argued it would have huge environmental consequences.

They also said it was unfeasible on technical grounds and that not all the states through which the rivers flow might allow waters to be diverted.

Some Indian states already have long-running water sharing disputes.

Delivering the court's order earlier this month, the judges said the project had long been delayed, resulting in an increase in cost.

Some 10 years ago, the super-ambitious scheme was billed at \$120bn and was estimated that it would take 16 years to complete.



The court has also appointed a committee to plan and implement the project in a "time-bound manner".

Even before any of that began, Bangladesh was already quite critical of the idea.

"We can never agree to it," Ramesh Chandra Sen, Bangladeshi water resources minister told the BBC.

"Our agriculture, economy and our lives depend on these rivers, and we cannot imagine their waters being diverted."

Downstream impacts

The Ganges and the Bramhaputra, Asia's major river systems that flow down to Bangladesh, are among the rivers India has planned to divert to its western and southern parts.

Ainun Nishat, a Bangladeshi water resource expert, was even more critical.

"India assumes that these rivers stop at its borders and that there will be no downstream impacts to Bangladesh if it did anything to those resources," he said.

"They (India) have always thought that the Bramhaputra has a surplus water but they don't seem to remember that there is a sovereign country called Bangladesh downstream which has a need for water."

Minister Sen said there had been no official communication with his government on the project from the Indian side.

Nepal's Energy Minister Posta Bahadur Bogati too said he had not received any official information.

Senior Nepali water expert Santa Bahadur Pun said there were concerns that politicians might not be able to secure a good deal for allowing India to build dams and reservoirs in Nepalese territory.

"That is because we hear our leaders talking only about the stereotype hydropower development whereas they should be focusing on making India pay for the downstream benefits it would be getting from its river-linking infrastructures in Nepal."

Such concerns also stem from the fact that some think Nepalese politicians are too preoccupied with the prolonged peace process that India mediated after a 10-year Maoist insurgency.

Bhutan says it has not been apprised of the project idea.

"While we recognise rivers as a trans-boundary issue, there has been no direct dialogue as far as building structures in Bhutan for the project (of India) is concerned," Bhutanese Minister for Agriculture and Forests Pema Gyamtsho told the BBC.



'Conceptual stage'

Media reports and academic papers apart, little has come out officially about the inter-river linking project.

In 2006, the Indian water resources minister at the time gave a brief response in the parliament when asked if there would be a white paper on the project.

"The ILR project is still at a conceptual stage only and all the far-reaching effects of the link projects can be analysed at the stage of preparation of detailed projects.

"As such, there is no need to release a white paper on the ILR at this stage."

Indian water resources ministry officials made no comment to the BBC's query how India took its neighbours' reactions to the recent supreme court's order to implement the river linking project.

Many of India's past water treaties and agreements with neighbouring countries Bangladesh, Nepal and Pakistan have been mired in disputes.

And now Delhi has had to worry about China's plans to divert its southern rivers to the north, analysts say.

The main concern has been proposed Chinese hydro-electric plants on Tibet's Yarlung-Tsampo river that becomes the Bramhaputra in India, although Beijing has said it does not intend to divert its waters.

A number of studies have shown South Asia as one of the flashpoints over water resources in the future, particularly in the wake of climate change and a burgeoning population.

A recent assessment by the US intelligence agencies has said beyond 2022, South Asia will be one of the regions in the world where "water would be used as a weapon of war or a tool of terrorism".

"Concerns over India rivers order", Navin Singh Khadka, 30/03/2012, online at: <u>http://www.bbc.co.uk/news/science-environment-17555918?utm\_source=Circle+of+Blue+WaterNews+%26+Alerts&utm\_campaign=16209fbf59-RSS\_EMAIL\_CAMPAIGN&utm\_medium=email</u>

BACK TO TOP



# Nepal Lawmakers Approve China Dam Project

NEW DELHI—A parliamentary committee in Nepal has given the go-ahead for China Three Gorges Corp.'s \$1.6 billion hydroelectric-power project after the Chinese state-owned company threatened last month to pull the plug on its investment.

Lawmakers had raised concerns that Nepal's government had awarded the contract without opening it up to international bidding, prompting the Chinese company to threaten in a letter to the government in March that it would scrap the project unless things moved forward.

Shanta Chaudhary, head of the parliamentary committee on natural resources, said Monday the committee had decided to approve the project, providing China Three Gorges Corp. meets some criteria, which include routing the investment through the country's newly formed Nepal Investment Board.

"We have decided that the project should go ahead after due corrections in the agreement between the government and the company," Ms. Chaudhary said, adding that the committee took the decision in a meeting Sunday.

The committee, in a 24-page report, found "serious legal and administrative errors" in the procedures followed by Nepal's Energy Ministry while granting a project license to China Three Gorges.

It said the ministry didn't consult with the finance ministry and other government authorities while taking its decision and deprived the country of maximum benefits that it hoped a competitive bidding process would have brought.

The committee said separate investment proposals by two other Chinese companies, Sinohydro Corp. Ltd. and China Machinery Engineering Corp., who had shown interest in the project weren't given due consideration by the energy ministry.

The committee cited a recent Nepali legal manual on hydroelectricity to contest the government's claim that it had power under domestic law to award hydroelectric projects without a bidding process.

The committee, however, said the project should be implemented nonetheless given Nepal's energy needs and a desire for good relations with China. The committee directed the government to ensure the similar "procedural and legal mistakes" aren't repeated in the future.

It also advised the government to negotiate so that Nepal's state power utility gets 25% in the project, local residents of the project area 10% and domestic industrialists and other residents 14%.

On Feb. 29, China Three Gorges and Nepal's Ministry of Energy signed an agreement for the project on the Seti River in northwestern Nepal. Nepal's state power utility would hold 25% and the Chinese company the rest. The two sides have agreed to complete the project by December 2019. Nepal is hoping to tap huge hydroelectric potential from its fast-flowing Himalayan river system and the 750-



megawatt hydroelectric dam and power project is key to these ambitions. The development is one of a suite of overseas infrastructure projects that China's state-owned companies are undertaking.

China is building infrastructure projects, from dams to ports, in neighboring countries and further afield. But the country also has faced setbacks, including Myanmar's decision last year to cancel a \$3.6 billion hydroelectric dam, citing environmental concerns. The Chinese state-owned company involved in that project said last month it still hopes to proceed.

The delays over the project in Nepal come amid a tussle between political groups in the country's Constituent Assembly, which is the nation's parliament. The country emerged from a 10-year civil war in 2006 but debates continue to rage over issues such as what form of government the country should follow.

The coalition government, which is led by a party of former Maoist rebels, argued it was allowed under the country's water-resources law to award major dam construction contracts without a bidding process. Some 40% of Nepalis don't have access to electricity and the government is keen to quickly exploit the nation's hydropower possibilities.

After the parliament raised concerns, China Three Gorges last month wrote a letter to the Nepalese government threatening to pull out unless it cleared the project.

Arjun Kumar Karki, joint secretary in the policy and foreign-coordination section of Nepal's Ministry of Energy, said the government is yet to receive the decision and recommendations of the committee. "The government will decide how to proceed after going through the recommendations," Mr. Karki said.

China Three Gorges couldn't be reached immediately for comment but the company has said in the past that it is up to Nepal's government to decide whether to push ahead with the dam.

Nepal not only hopes to meet its own power shortages through such deals but also to sell surplus energy to its neighbors, India and China.

"Nepal Lawmakers Approve China Dam Project", 02/04/2012, online at: http://online.wsj.com/article/SB10001424052702303816504577319061311691568.html?mod=googlenews\_wsj&utm\_so urce=Circle+of+Blue+WaterNews+%26+Alerts&utm\_campaign=16209fbf59-RSS\_EMAIL\_CAMPAIGN&utm\_medium=email

BACK TO TOP



# Parting the waters

China's coming water crisis threatens growth and stability

The Yarlung Tsampo River has hurtled down from the Himalayas for millennia, cleaving the mountain range in two and creating one of the world's steepest and longest canyons. The river forms a huge bend in the remote southeastern corner of the Tibet before flowing into India and Bangladesh and on to the Bay of Bengal.

The Yarlung Tsampo is by far the largest river to cross China's borders. It is also one of the world's most promising sources of hydropower. A 510-megawatt hydropower station is already under construction on the river, and Beijing has studied the feasibility of building a dam at the river's bend to generate 40,000 megawatts of electricity each year, twice that of the giant Three Gorges Dam.

In India, these projects are inciting anger and worry. Some in New Delhi claim Beijing is also planning to divert water from the river, which India calls the Brahmaputra, through the Himalayas and on to China's parched north. Chinese officials have denied any such intention: They say such a diversion would cause too much damage to the environment and bilateral relations. Yet Indian suspicions that China will mismanage this wealth of water continue to mount.

## A shaky foundation

The water resources of the Tibetan plateau seem likely to give rise to more international conflicts in the decades to come. Sometimes called "the third pole" because of its massive glacial ice deposits, the plateau is the source of five major international rivers – the Brahmaputra, Salween, Mekong, Arun and Irtysh-Illy – as well as China's Yangtze, Yellow and Pearl rivers. Altogether, they support nearly one-third of the world's population.

Asia's bright economic prospects are often taken for granted. Yet rapid economic and population growth is sucking dry the continent's already-scarce water resources. Asia has three-fifths of the world's population but just one-third of its water resources.

This shortage threatens to derail Asia's future, either by constraining economic growth or destabilizing its decades-long peace, argues Brahma Chellaney, a professor of strategic studies at India's Centre for Policy Research and the author of "Water: Asia's New Battleground."

China is at the center of Asia's water debate, both because it controls much of the continent's glacial water resources in the Tibetan plateau and because it is also experiencing a worrying water shortage.

China's per capita water availability is only about one-quarter of the world's average, and what resources it has are distributed unevenly. Northern China supports about half of the country's population and most of its agriculture, yet it has only about 20% of its water, said Ma Jun, director of China's Institute of Public and Environmental Affairs.

Droughts in the north and northwest already constrain agricultural and industrial output, and excessive water withdrawals and unsustainable farming practices are encouraging the creep of



desertification. Rampant water pollution has exacerbated these shortages, making usable water scarce even in the water-rich south, Ma said.

Climate change will only worsen the situation. Although China's renewable water supplies are expected to initially increase as the glaciers of the Himalayas melt, the water flow could start to dwindle by mid-century. The 2030 Water Resources Group projects that China's water demand will outstrip supply by about 25% by 2050.

Such a shortage would put huge constraints on economic growth. Rising costs could squeeze production at water-intensive industries, including steel, chemicals and power generation, and cause the price of locally grown crops to spike. China's poor may find themselves unable to afford sufficient food and water, a situation that could easily spark social unrest.

#### The course of history

Beijing has chosen to address this outsized problem with an equally massive solution: the South-North Water Diversion (SNWD).

Diversion projects have been used around the world to channel water from areas of abundance to scarcity, but never before on this scale. The SNWD project will divert 44.8 billion cubic meters of water from the Yangtze River in central China to depleted rivers in the north through three channels, two of which will be more than 1,300 kilometers long. China Greentech Initiative, a consultancy, compares the task to "transferring Lake Erie to Texas within 10 years."

The project's monetary and social costs are no less striking. US non-profit organization International Rivers estimates the project's total cost will be US\$62 billion, roughly twice the cost of the massive Three Gorges Dam.

The mega-scheme was approved in 2002 after 50 years in planning. Mao Zedong first proposed the diversion in 1952, saying, "Water in the south is abundant, water in the north scarce. If possible, it would be fine to borrow a little." The idea fit perfectly with Mao's ethos of bending nature to human will, but it proved too technically complicated for the time. The plan was tabled until 1992, when Premier Li Peng, a trained hydroelectric engineer, resurrected it for study.

As the massive project enters its second decade of construction, it is clear that "borrowing a little" water is not nearly as straightforward as Mao implied. All three routes of the water diversion project have experienced serious setbacks.

The eastern leg, which directs water from the mouth of the Yangtze to the northern port of Tianjin, was intended to supply water to the north by the 2008 Olympics, but severe water quality problems have delayed its completion until 2013. The route is simplest from an engineering perspective, since it follows the 1,400-year-old Grand Canal and draws water from where the Yangtze's volume is greatest. Yet after running through the heavily industrialized east, the water is so polluted as to be prohibitively expensive to treat.

The central leg has been even more problematic. The route, which snakes from the Han River, a



tributary of the Yangtze, to Beijing and Tianjin, required engineers to both tunnel under the Yellow River and expand the Danjiangkou reservoir in Hubei province, inundating farmland and displacing nearly 350,000 people. The project's completion date has been delayed from 2010 to 2014, partly because concerns about environmental damage to the Han River have led authorities to consider diverting water to the Han from the Three Gorges reservoir on the Yangtze.

Critics say these diversions threaten to turn the mighty Yangtze into another Yellow River, which has been crippled with pollution and reduced to a trickle. Around 70% of the Yellow River's volume is now siphoned off before it reaches the sea. Environmentalists worry that reducing the Yangtze will exacerbate pollution and cause saltwater to flow back up the delta, worsening the already-poor water quality of Shanghai and other cities.

"The project has led to a lot of heated debate," said Chen Haowen, a manager at consultancy Frost & Sullivan. "It provides only temporary relief for water problems in China and it also causes unavoidable ecological and social problems."

But despite the huge costs involved, many Chinese continue to see the construction of the eastern and central routes as essential. After all, worsening water shortages also require sacrifices: The Asian Development Bank estimated in 2010 that water shortages drive 400,000 Chinese from their homes annually.

"It does create some environmental problems, but from a comprehensive perspective it's very necessary," said Guo Youzhi, secretary general of industry group China Desalination Association.

# Journey to the west

It is the project's final route that is the most difficult and the most controversial. Because the western route requires pumping stations and tunnels to be built through mountain ranges at an altitude of 3,000-5,000 meters, it is not expected to begin construction until 2020 or be completed until 2050. Environmentalists protest that the western leg will cause the most damage of the three routes, since it draws water from the small, upstream tributaries to the Yangtze.

The project has also become the focus of criticism abroad. Some Indian officials claim that Beijing plans to link the western leg with the headwaters of the Brahmaputra River on the Tibetan plateau, thereby lessening the volume of water that flows into India and Bangladesh. Some argue Beijing already has: "I strongly suspect that China has started diverting the Brahmaputra or that it has built a dam to block the flow of the river," Tako Dabi, the home minster of Arunchal Pradesh, a disputed region at the Indian border, told Indian press on March 1.

There is no evidence that Beijing plans to pursue such a diversion, but it has certainly considered it. Officials in the People's Liberation Army have discussed diverting waters from Tibet since the 1980s. In 2005, a PLA officer named Li Ling published a book entitled "Tibet's Waters Will Save China" which argued for channeling water from the Yarlung Tsampo northward to the Yellow River, a process that would entail blasting 56 kilometers of tunnels through six mountain ranges, potentially with controlled nuclear explosions. Never easily daunted, the Chinese government reportedly bought and circulated 10,000 copies.



Most Chinese now say Li Ling's ideas have been discredited as difficult to implement, damaging to the environment and potentially catastrophic to China-India relations. "That was some kind of proposal raised by some Chinese experts, but I don't think the Chinese government is going to adopt this," said Zhao Gancheng, senior fellow and director of South Asia Studies at the Shanghai Institute for International Studies. "Building a dam is one thing, and changing the direction of the water is another."

Yet India remains deeply suspicious, partly due to claims made by Brahma Chellaney. In his book "Water: Asia's New Battleground," Chellaney cautions that water diversion projects in Tibet would proceed the way China's mineral-wealth-exploitation strategy has been implemented in the region – quietly. Chellaney noted that state-owned companies have quietly built dozens of dams on the upper Mekong, Irrawaddy and other international rivers.

Opponents in downstream countries complain these dams reduce water flow in times of relative scarcity and damage river ecosystems. The Brahmaputra is the most visible flashpoint, but Kazakhstan, Cambodia, Laos, Thailand and Vietnam have all grown more vocal in their criticism of China's damming and diversion of international rivers.

These countries have little recourse. International law does not yet provide water rights for downstream countries, and China has refused to accept full membership in institutions aimed at resolving water disputes, such as the Mekong River Commission. China signed an agreement with Kazakhstan on water quality in the Irtysh River in February 2011, but that came only after decades of negotiation.

Yet while China can lawfully ignore the complaints of downstream countries, it may be politically disastrous to do so. As water grows scarcer in Asia, these disputes could trigger conflicts – especially if dams and water diversion projects disrupt ecosystems and impoverish farmers downstream, as critics say they will.

# On the shoulders of giants

As water in China and neighboring countries grows scarcer, massive water infrastructure projects may be losing their logic. Diverting water alleviates shortages, but it cannot fully meet demand, and it may have adverse effects on other ecosystems and communities.

"Looking ahead, we can still try to buy some more time by building all these massive diversion projects," said Ma Jun, the author of "China's Water Crisis." "But I believe that will not be the solution, because it can't even fill out the current gap, let alone meet the rising demand in the future. We have to recognize we have almost reached a limit in our expansion of supply and now it's high time for us to shift our focus to conservation."

Governments are now resorting to incredibly energy-intensive methods to keep the water flowing: pumping it from deep aquifers, transporting it from far away, and treating and desalinating it. The true cost of these projects is hidden from consumers. Governments subsidize construction of facilities, while social and environmental costs often go unrecorded.



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

Because this hard-won water is priced so cheaply, much of it is simply wasted. Agriculture accounts for a staggering 70% of water use in China, but analysts estimate that more than half of the water used for irrigation is lost before it reaches the field due to old, leaky irrigation systems. Farming methods are also to blame: Chinese farmers typically flood their fields rather than using more efficient drip irrigation, said Jon Galligan, an analyst at CLSA.

Finally, Beijing continues to subsidize the cultivation of water-intensive grains such as wheat and corn in the arid north – creating a mind-boggling situation in which southern China exports water to the north so that northern China can export water-intensive food to the south.

The industrial sector also renders a huge volume of water useless. About one-third of industrial waste water and more than 90% of household sewage in China is released into rivers and lakes without being treated. For this reason, Ma argues that the starting point for China has to be pollution control. "If we still discharge all this waste into our water ways, then we can't talk about re-using or recycling water, because those discharges will destroy whatever limited water resources that we have," he said.

#### A cautionary tale

Beijing recognizes the economic and ecological sense of preserving its water. Conservation was the focus of last year's No 1 document (the first policy recommendation issued by the State Council) and was stressed in the 12th Five-Year Plan for Water. Together, the documents pledged investment of US\$634 billion in water conservation over the next decade.

Beijing has set useful policies at a federal level, for example, requiring local governments to invest 10% of revenues from land sales in irrigation. But Kenneth Lieberthal, director of the John C Thornton China Center at the Brookings Institution, argues that China's environmental problems originate not in policy but in implementation: "...much of the environmental energy generated at the national level dissipates as it diffuses through the multi-layered state structure, producing outcomes that have little concrete effect," Lieberthal writes.

One major obstacle is the way water policy is governed – currently, by six separate agencies that reportedly fail to cooperate on various aspects of management. An even bigger complication is that local environmental regulators are beholden not to national regulators but to local officials, who continue to be evaluated primarily in terms of economic growth.

Many claim that China will inevitably clean up the inefficiencies and waste of its own industrial revolution just as the US and Europe have done. China came late to its industrial revolution, they say, and its people deserve a chance at the same wealth and opportunity.

That may be true, but unfortunately for China, it appears to be running out of time, said Peggy Liu, the chairperson of non-profit environmental organization JUCCCE, "Americans think this is a Chinese issue, but it's not. It's a natural stage of development. But it's also true that the world today can't really afford China to be going through this."

"Parting the waters", 01/04/2012, online at: http://www.chinaeconomicreview.com/node/56995



#### **\*** Water woes

Swept away in a tidal wave of chaos, Egypt is losing sight of what really matters. Engrossed in our daily battles, we are failing to keep track of anything not within our immediate scope of vision. One battle demands our attention then another without relief. Port Said was one, then the writing of the constitution, which went out of control in a matter of days.

No wonder we are unable to keep track of major international research that has a direct bearing on our future. The recent reports released about worldwide water shortages, which gained top billing in the international media, went almost unnoticed here.

Reports released on the occasion of World Water Day paint a grim picture of the future, predicting major shortages that may lead to military conflicts, especially in overcrowded Third World countries.

According to these reports, many of which were compiled by intelligence agencies, the water problem may remain dormant for 10 years or so. But as of 2022, the shortages may result in wars or terrorist acts in areas such as the Middle East and Southeast Asia.

The curious -- and scary -- thing about these reports is that they seem to apply to Egypt in particular. The reports speak of turbulence in areas where poverty is widespread and water is being mismanaged, which is fairly close to our situation. And the water crisis is likely to be worst, according to these reports, in countries where governments are weak, conditions are unstable, and crime is widespread, all of which are qualities we have been acquiring of late.

Countries with shared river basins, US experts say, are particularly vulnerable to rivalries leading to war or acts of terror.

As water shortages escalate, differences that were in the past settled through negotiation would become harder to resolve. And upstream countries would be tempted to decrease the volume of water available to downstream ones. In areas inhabited by rebels, water may be used as a weapon by governments challenged by the rebels, or vice versa.

The reports explain to some extent why Egypt is having so much trouble with some of its neighbours, why negotiations run into dead ends, and why bellicose rhetoric has become so common.

Rogue states, or countries with little regard for international law, may attack the water and power plants of their neighbours, or threaten to do so, to achieve political gains.

As war becomes a possible reality, countries in panic may take extreme or costly measures to protect their water supplies.

The reports published so far do not include all the river basins across the world, but among the rivers often cited in the study are the Nile, the Jordan, the Tigris, and the Euphrates, all of which, along with the Mecong in China, are considered potential flashpoints.



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

Which countries are more likely to get drawn into water conflicts? The question is not addressed by the authors of the report, but they give ample examples of previous hostilities caused by water shortages. These include India and Pakistan, Syria and Turkey, and Palestine and Israel.

The world population will grow by additional two billion people by 2050, according to UN estimates. At which point, water will be scarcer than oil, and water shortages will be translated into food shortages. Suffice it to know that to produce one kilogramme of wheat you need 1.5 litres of water, and to produce a kilogramme of meat you need 15 litres of water.

The vulnerability of our region to this forthcoming form of crisis is not in doubt, and yet we're not doing anything about it. Indeed, we don't seem to care.

"Water woes", Salama A Salama, 5-11 April 2012, online at: http://weekly.ahram.org.eg/2012/1092/op4.htm

BACK TO TOP



## \* Increasing water prices may cut consumption, future risks

KUWAIT: "The future is bleak for Kuwait," said Dr Khaled Al-Hajeri, Environmentalist and Head of Kuwait's Green Line Environmental Group. Speaking on Kuwait's position as one of the most water-stressed countries in the world, in addition to its exceedingly high rate of water consumption, Al-Hajeri added, "There is a severe risk of Kuwait suffering a water crisis, but no one is paying attention. It's claimed that there is enough water stored for six months, but past experience tells us that water crises cannot be handled efficiently."

The problem of excessive water consumption has been a recurring issue for quite some time in Kuwait. Dr. Khaled Al-Barak, Head of the Water Science Department at KISR, said in an interview with KUNA that Kuwait managed to record the highest water consumption rates, as judged by a global scale, with approximately 500 litres per capita. The Water Stress Index 2011 released by risk analysis and mapping firm Maplecroft, also listed Kuwait as one of the world's most water-stressed countries, along with Bahrain and Qatar, which drives up future risks even further.

The Water Stress Index 2011 warned, "... the dual drivers of climate change and population growth will combine to squeeze water resources and affect the food security of governments across the world, regardless of how water secure they may be today." The recently released US Intelligence assessment further warned that the Middle East may face severe issues regarding water supplies, including political instability and hampered economic development. The report, which was compiled by the Office of the Director of National Intelligence, did not predict a war over water supplies within the next decade, but said that it is unlikely that supplies will be able to keep up with demand by 2040. The increasing shortages, the report warned, may lead to conflicts in the future over water sources.

Al-Hajeri noted the already fragile position of the region. "We're in a conflict region as it stands already, so we need careful management to ensure further issues, such as water issues, don't arise in the future and add to the list of problems." He added, "If there is any disaster or crisis in our neighbouring countries, Kuwait will be in serious trouble because there isn't a viable alternative water source."

According to Al-Hajeri, to avoid the issue worsening or leaving the State in a crisis later, plans must be developed from now. "We are now facing issues already, and they must be managed properly for the sake of the future. A water pipeline would be ideal because it Kuwait's seawater was rendered unusable, it would give the country a viable alternative." He added, "A GCC cooperation to form a joint plan to ensure, at least, that mineral water is shared fairly across the region would also be ideal."

Al-Hajeri added that water consumption, waste and regulation must also change, "There is no law pertaining to the environmental and water issues in Kuwait. There must be laws regarding water wastage and water use, and these laws must be respected."The price of water also plays a large part in the amount of excessive wastage, "The Government must rethink the price of the water.



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

As it stands, water is extremely cheap so people overuse it, totally unaware of how excessive their water use really is. They use vast amounts of water to clean their streets; it's abnormal." He added, "It is not acceptable to provide water so cheaply. If the government doesn't want to increase the prices, they should at least make sure that water bills are taken seriously and paid monthly on time."

"No one is thinking of society as a whole," Al-Hajeri lamented. "By thinking of short term issues alone, the future of the country is at great risk. As it stands, there is no sustainable future. We must develop and build Kuwait."Al-Hajeri further reiterated the importance of action. "In the future, water could become more expensive than oil. There must be solutions from now; there must be pressure and awareness."

Fajer Qasem, creator of the Goodwill Calendar and of the Green Habits Campaign, is more optimistic. "Kuwait is and our Government is generous enough to cater to the needs of its people by subsidizing necessities such as water and electricity," she said. Qasem strongly agrees, however, that change is necessary and that awareness is key. "Many of our residents aren't aware of their wasteful habits, but I believe if people knew and were offered a solution, they would gladly comply." Regarding Kuwait's future, she said, "The younger generation of Kuwaitis show great promise in these matters and I have full faith in their resolution to bring about change."

"Increasing water prices may cut consumption, future risks", Lisa Conrad, 06/04/2012, online at: http://news.kuwaittimes.net/2012/04/01/increasing-water-prices-may-cut-consumption-future-risks/

BACK TO TOP



#### Forum to showcase water saving system

A case study of an award winning irrigation system capable of saving up to 85 per cent more water than traditional irrigation systems will be presented at the Agribusiness Outlook Forum tomorrow (April 2) in Dubai.

Developed by UAE based water management solutions company EPIC Green Solutions, the pioneering system uses an Environmental Passive Integrated Chamber (EPIC) technology and won the Most Innovative Use of Technology Award at the H20 Awards in Dubai, November 2011.

The EPIC system was installed in two of the Al Dahra Agricultural Company greenhouses and open field farms in Al Ain, where it was compared to regular drip irrigation systems. Initial tests revealed that not only did the EPIC system save 85 per cent more water, but also produced twice as much growth, using 45 per cent less fertiliser.

Bart Rehbein, managing director of EPIC Green Solutions, said that agricultural independence and food security is extremely important to all countries in the Middle East and with a population of 2.4 million in the UAE; it is all about conserving water and using it more efficiently.

"Adopting sustainable agricultural methods and water storage options is the right move for a country to cater to increasing agricultural demands and to be able to produce its own crops effectively," he said in the build up to the Agribusiness Outlook Forum.

"The per capita water availability in the Middle East is expected to halve by 2050 and it is mandatory to educate the region and its residents about the anticipated water shortage."

Along with the Al Ain Farm Project, the EPIC irrigation system was also installed on the Yas Links Golf Course on Yas Island in Abu Dhabi in April 2011 with results similarly impressive.

Most recently in January, another demonstration plot was installed on Yas Island to grow salt tolerant plant species.

Rehbein added: "Results from the Yas Island plot show that average consumption of the various plants has been 2.77 litres per square metre per day, yielding savings of approximately 80 per cent more than typical irrigation systems. The success of this project will be an advantage for irrigation in the region and continue to show the versatility of the EPIC system."

Now in its second year, the Agribusiness Outlook Forum is a feature of AGRA Middle East, the region's only agribusiness trade event to be held from April 2 to 4 at the Dubai International Convention and Exhibition Centre.

Speakers will address crucial topics related to food security and discuss regional governments' approaches towards the improvement of market-led agribusiness and investment decisions.



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

"The EPIC system has played an important role in the conservation of water and has provided solutions to ensure the efficient use of this limited resource," concluded Rehbein.

"EPIC Green Solutions sees agriculture potential in the Middle East and we look forward to sharing our views on the topic with key decision makers at the Agribusiness Outlook Forum." – **TradeArabia News Service** 

"Forum to showcase water saving system", 01/04/2012, online at: http://www.tradearabia.com/news/AGRI 215129.html

#### BACK TO TOP



# Environment Agency Develops Master Plan To Combat Threat Of Water Shortages In Abu Dhabi

Agribusiness Outlook Forum told measures include tough eco-friendly steps to increase production, government policies to cut wastage

The Environment Agency Abu Dhabi (EAD) has developed a strategic plan for the management of the Emirate's water resources to combat the threat of severe shortages in future, delegates at the Agribusiness Outlook Forum in <u>Dubai</u> were told today.

The master plan calls for the adoption of stringent eco-friendly measures to increase water production in Abu Dhabi and urges government implementation of water policies to reduce wastage.

Dr. Mohamed Dawoud, EAD's Water Resources Manager, said Abu Dhabi has one of the highest per capita water consumptions in the world, with an average consumption of 550 litres of water per person per day.

"This consumption, combined with the predicted population growth in Abu Dhabi to 3.5 million in 2030, means we could face severe water shortages in the future, and need to rethink about water usage efficiency now," said Dr. Dawoud.

"The Emirate has witnessed rapid development in the last four decades, resulting in immense pressure on water usage," he added. "This master plan is an initiative that seeks to implement measures for limiting depletion of natural resources, and at the same time increase water usage efficiency in different sectors, including the agricultural sector."

"Governments are making efforts to improve water usage efficiency in agriculture through four main pillars - policy and strategy, technologies, legislations and regulations, and education and awareness to increase the economic value of water and efficient use by farm owners," he said.

Dr. Dawoud was addressing delegates on the Abu Dhabi government's approach for improving water use in agriculture and the role of the 2030 Master Plan at the Agribusiness Outlook Forum. The forum is a feature of the AGRA and VET Middle East exhibitions at the <u>Dubai</u> International Convention and Exhibition centre, which concludes tomorrow (Wednesday).

He said investment in the latest agricultural technologies and automated irrigation methods, such greenhouses using hydroponic systems, can save up to 40 per cent of water in agriculture, and deliver healthier produce.

"The 2030 master plan was developed with the intention of achieving sustainable utilisation of water resources in an eco friendly way, thereby enhancing sustainable development of Abu Dhabi," said Dr. Dawoud.

Richard Pavitt, Exhibition Director of AGRA Middle East, and VET Middle East, said: "The 2030 master plan provides an interesting insight into the current water scenario in the Emirate of Abu



Dhabi and addresses important issues of water supply and also underlines efficient water usage techniques."

Held under the patronage of His Excellency Rashid Ahmad Bin Fahad, Minister of Environment and Water, AGRA Middle East is supported by the UAE Ministry of Environment and Water, <u>Dubai</u> Municipality, the <u>Dubai</u> Flower Centre, and the <u>Dubai</u> Biotechnology and Research Park (DuBiotech). VET Middle East is officially supported by the Abu Dhabi Food Control Authority, with scientific support coming from CVR Laboratories.

"Environment Agency Develops Master Plan To Combat Threat Of Water Shortages In Abu Dhabi", 03/04/2012, online at: <u>http://www.abudhabicityguide.com/news/news-details.asp?newsid=9369&newstype=Local%20News</u>

BACK TO TOP



# Nigeria: Lagos - Water Everywhere but Not to Drink

WHAT an irony! That we live in a city that is surrounded by water yet we find it extremely difficult to get potable water for drinking and other domestic uses", exclaimed Pastor Chinonye Uzoma who resides at Amukoko, a sprawling slum in the Ifelodun Local Council Development Area, LCDA of Lagos State.

The Pentecostal pastor had asked one of his parishioners who drives a tricycle popularly known as Keke Marwa to assist him get a few cans of water because the taps in his compound and indeed, the entire neighbourhood had gone dry for months.

While many residents of the ghetto depend on water vendors known as Mairuwa. for their daily supply of water, others patronise water tanker vendors or retailers who own shallow boreholes. But the "Mallams" who supplied the water had suddenly disappeared from the streets while the unmotorable nature of roads in the area, had restricted the water vendors from coming to supply water on that fateful day.

The few tankers which manage to brave it to the area sold at very high costs that most people could not afford it. When the Keke Marwa operator eventually arrived with the water, he told his distraught pastor that the vendors had increased the price of a can from N10 to N15.

Much as Lagos is surrounded by water, there are some residential areas in the city where access to potable water could be described as a luxury. Indeed Nigeria is one of the few countries yet to meet the millennium development goal, MDG, on water and Lagos is believed to have contributed a large percentage to the country's inability to attain this goal.

A visit to some areas like Festac Town, Ajegunle, Amukoko, Itire, Lawanson, Aguda, Meiran-Ijaye, Abule-Egba to mention but a few, reveal that residents have little or no access to water. Not even government -owned hospitals are spared the water scarcity. The result is that many water vendors particularly from the northern part of the country, have capitalised on the scarcity to go into trading on water. These ubiquitous water vendors popularly called Mairuwa in Hausa Language, have taken over virtually all the nooks and crannies of the city to sell the essential commodity.

While some well placed water vendors erect tanks in front of their homes which serve as water reservoirs, others make carts which they use to carry several cans of water to the homes of their buyers. But generally, water vending is seen as a lucrative business hence many people are going into the business.

The sale of water is an age-long business in this part of the world. Before now, the vendors (mairuwas) carried two tins of water on their shoulders. The two tins were usually held together by a rope on a flat bar which gives it a kind of balance on the shoulders.

**Price:** The cost of a 25 litres keg of water varies from place to place and is dependent on the seller and the source of the water. Some vendors buy in water tanks and drums and resell to end users who buy in smaller containers such as Jerry cans, buckets and gallons.



Those who patronise these vendors told VanguardFeatures, VF that the dryness of most taps in the city, compelled them to patronise Mairuwas, although they know that the water bought from them may not be potable.. A woman who lives at Arolawun Street, Ilupeju, Mrs. Atinuke Robbinson told VF that the water pipes in her street have become rusty because water has not flowed through them for a long time now. Now that water has started running, she lamented that it is usually dirty and has a nauseating odour.

"As you can see, we now have regular supply of tap water in my area but the pipes are rusty and overdue for change because they were laid in the olden days. The water is directly from Water Corporation but it is dirty and usually smells. I stopped fetching it some years ago and I patronise water vendours instead," she said.

**Dry wells:** Most parts of Lagos depend on water from shallow wells for domestic and other household uses. Some residents of Awodiora Town and Achakpo in Ajeromi Ifelodun LGA told VF that they do not have access to pipe- borne water. Even the wells and bore holes are now dry because the rains have not been forth-coming.

#### Human consumption

According to them, the water from these wells and boreholes are unsuitable for human consumption as they are usually yellowish and smells. They noted that the only option available is to patronise water vendors for drinking. "We can only use the water from wells to bath after purifying it with chemicals like alum", they disclosed.

Although the Achakpo community in Ajeromi Ifelodun can boast of a water scheme provided by Messrs Guinness Nigeria Plc, residents of the area, alleged that the taps are usually dry and this scenario has necessitated their patronage of water hawkers. Another resident explained that the Guinness water project is too far from his residence, hence the only alternative is to buy water outside.

Another resident of Achakpo who introduced himself as Mr. Frank Akubueze, said he buys water in drums. According to him, he finds it difficult to patronise Mairuwas. "Many people usually patronise Me Ruwas because they have no choice. I spend more than N1000 to fill a drum but I don't patronise Mairuwas because their Jerry cans are usually dirty. The water they sell has colour and there is the tendency that you can contact water borne diseases such Typhoid fever or Cholera from using water bought from them. I patronise those who sell directly, that is the water tankers; I have no option than to buy at that outrageous amount since we don't have access to water from the government ," Akubueze said.

Source unknown but k kreadily available: At Itire and Lawanson in the Surulere area of the city, Madam Fola Ogunibe and Mr. Onaolapo Godwin told VF they patronise Me-Ruwas daily.

"We come back from work late in the night and our saving grace are the Me Ruwas because we don't have time to start looking for water. Mairuwas are readily available; all we need to do is to provide the cash and the water will be at our door steps. We don't know the source and we don't need to ask anybody."



#### The business is lucrative - water vendour:

Although none of the Me-Ruwas was ready to speak, a water vendor and a resident of Olodi-Apapa, Mrs. Mary Ekaobong said she gets her supply from the Lagos State water Corporation. According to her, she buys 2000 litres of water at the rate of N2,500 and resells at N60 per 20 litres and N1,500 per drum respectively. "A friend of mine introduced me to the business and I found out it is very lucrative. My supplier brings it from Festac and I dispense to the end users," she said.

Water Corporation keeps mute: Effort to speak to the Managing Director of the Lagos State Water Corporation, Mr. Shayo Holloway, an Engineer failed. Although he did not pick his calls, he sent a text message requesting our correspondent to see Mr. Ladipo, the Corporation's image maker. After several calls and text messages, Mr. Ladipo replied to say he was still trying to book an appointment for a formal interview which he never did until press time. Rather, the Corporation sent a press statement in which it urged Lagosians to desist from using water from shallow boreholes.

Mr. Holloway noted that the majority of boreholes and wells in the State are shallow which means that they are not up to 150 metres deep or not subjected to technical and engineering specifications. According to him, "water from this aquifer is too prone to pollution with attendant health hazards, such as typhoid, gastroenteritis, diarrhoea and other related water-borne diseases."

He further noted that proliferation of boreholes has adverse environmental impact over medium or long term period with salt water intrusion from the ocean and land subsidence. Holloway described boreholes and wells as sources of pollution of the ground water, thereby causing its rapid depletion.

To ensure consistent water supply where consumers have tapped to its mains, the Corporation urged the residents to report whenever there is shortage of water supply to check the "stop-cock valve" which is usually within the premises on the service line as this may have been tampered with.

"Instead of reverting to service of water tankers, we urge you to contact the Water Corporation near your areas for quick intervention," Holloway said. He cited the recent rehabilitation exercise in Otto, Lagos Mainland as the cause of scarcity of water in Ebute Metta and Apapa Road axis adding that such exercise normally causes brief water scarcity.

Governor Babatunde Fashola had recently stated that the main reason his administration embarked on the construction of various water works and rehabilitation of the existing ones is to ensure that pipeborne water is available to every home and industries in Lagos. He cited the construction of additional 15 mini waterworks spread across the local government areas of the state and construction of a dedicated 12.15 MW power plant for constant power supply to Adiyan, Iju and Akute water facilities as jointly responsible for about 90 percent of water supply to the metropolis.

Minister seeks prudent use of water: Minister of Water Resources, Mrs. Sarah Ochekpe said while the government is doing all it can to address the shortfall in water supply, the people must do their best to be prudent in the use of water. She said: "I want to use this opportunity to call on Nigerians to know that as essential as water is, it is important they know how to manage it properly," adding that the tap should always be turned off when not in use.



The Minister said it will cost about \$2.5bn to provide potable water for 75 per cent of Nigerians. She explained that though the United Nations Children Fund said that the global access to water had been met, the nation is yet to achieve its target of providing water to all citizens.

Speaking at a forum in Abuja recently, Mrs. Ochekpe stated that Nigeria might adopt the Israeli model of water management to preserve its water resource. According to her, Israel does not use water carelessly, but uses it sparingly and also harvests rain water which is used during the dry season.

The government, according to the Minister, has spent \$5m for consultancy services on the Lake Chad which had shrunk from about 2, 700 square kilometres to 2,000 Square kilometres in recent times

#### Declare access to water a human right:

Meanwhile, a non-governmental organisation, NGO, Bread of Life Development Foundation, has urged the government to declare access to safe water a human right for every Nigeria.

Noting that Nigeria is one of the 122 countries that supported the July 28, 2010, United Nations resolution that recognised the human right to water, the organisation in a statement by its Executive Director, Babatope Babalobi called on the Nigerian government to domesticate the human right to water in National water supply and sanitation policies and laws without further delay.

Given that most of the Millennium Development Goals and targets would not be achieved unless there is adequate and affordable access to water and sanitation policy, we expect the Nigerian government to accord the highest priority to the improved water and sanitation services delivery and the first step towards this is by recognising the human right to water, initiating programmes to implement and enforce this right. It is regretful that statistics released by the UNDP Human Development report projected that on current trends, Nigeria will not attain the MDG water target before 2040 and it is unlikely to attain the Sanitation target until 2076.

This situation is unacceptable, but can be redressed if the President Goodluck Jonathan Administration accords topmost priority to the water and sanitation sector, implement appropriate reforms, adequately funding water and sanitation projects and programmes and carry out far reaching measures to curb and curtail corrupt practices in the sector.

The Bread of Life also recommended several other steps to ensure Nigerians, especially the urban and rural poor are able to access safe water supply and sanitation services.

#### Govt should declare national emergency in the water sector

The NGO also called on governments at all levels to prioritise water supply and push more funds to the sector. It enjoined the Federal Government to allocate fund for rehabilitation and expansion of state water schemes. At the Federal level, the National Water Supply and Sanitation Policy should be reviewed and the National Water Resources draft bill reviewed and passed into law.



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

They should make the implementation of Water reform programmes by states a condition for Federal Government support to their water sector programmes. Bread of Life also wants the government to declare a national emergency in the sector while states should make a commitment to make access to 30 litres of safe water per day, within 250 metres a right of every Nigerian.

"In rural areas, household water treatment should be encouraged and popularised to ensure point of use water treatment. Low costs technologies for household water treatment that can be promoted include filtration and boiling. The government should launch a National Campaign for household water treatment to prevent future preventable deaths through water borne diseases such as guinea worm, cholera, etc," the group said.

"Nigeria: Lagos - Water Everywhere but Not to Drink", 03/04/2012,online at: <u>http://allafrica.com/stories/201204040240.html</u>

#### BACK TO TOP



## Pressure Control System Helps District Conserve Water

IBM Research scientists and the Sonoma County Water Agency (SCWA), which supplies water to more than 600,000 people in the heart of Northern California's wine country, have teamed up to address the pressing problem of water conservation.

The new program, which builds on an existing IBM-SCWA water management collaboration, uses analytics technology to help Valley of the Moon Water District (VOMWD), a purchaser of wholesale water from SCWA, to reduce water loss. This is done by optimizing the setting of the pressure reducing valves at the entrance to the district's distribution network based on data from existing sensors as well as from SCADA, billing, pressure gauges, and flow loggers throughout the water system.

"We're helping SCWA and Valley of the Moon to more efficiently analyze data, anticipate problems and manage resources," said IBM Smarter Water Program Director Michael Sullivan. "The ability to track water at such a granular level helps SCWA and Valley of the Moon make informed decisions about how to manage – and conserve – water along its entire lifecycle."

Developed by scientists at IBM Research – Haifa in Israel, the pressure management system provides recommendations for water pressure adjustments based on usage, weather, and environmental conditions. The benefits of improved pressure management include reduced water loss, energy savings, and reduced wear on the infrastructure – alongside an improvement in the quality and turnover of stored water.

"We are proud to partner with IBM and SCWA on this first-of-a-kind program to field test a noninvasive analytical tool to better manage water pressure and potentially locate leaks," said Krishna Kumar, General Manager, Valley of the Moon Water District.

Managing the pressure of a water system and its pipes, valves, pumps, tanks and other equipment is a complex task. If a well stops working, some water tanks will not be filled. If pressure is increased to fill those tanks, other tanks may not be emptying as often as they should to maintain a proper exchange of water and maintain required water quality. Or, if there is a leak, reducing the pressure to one pipe will reduce the amount of water lost through the pipe, but it also means that some consumers may not have enough pressure in their taps at home.

Prior to working with IBM, Valley of the Moon operations staff had to continuously – and manually – adjust the pressure of each valve to maintain optimal pressure across the system – a time consuming and inefficient process. Now, IBM analytics provides the engineers with detailed information and recommendations for optimal settings for each valve based on what's happening across the entire system so that valves can be adjusted as necessary.

In addition to the pressure management work, IBM and SCWA are extending the new technology to also enable leak detection by comparing real-time information about the water system with expected and historical values.



The Sonoma County Water Agency has been using IBM's water management system to gather and analyze water usage data of its customers since 2010. The goal is to help the county conserve water.

By bringing together and analyzing data including water usage and quality, weather and climate, and environmental considerations, IBM's water management system is helping SCWA make better decisions about resource allocation dynamically based on near real-time information. The system includes geographical and system map views so SCWA and its partner stakeholders can identify and address specific issues such as low chlorine residual or low storage tank levels, in minutes rather than hours.

In addition to integrating and analyzing information collected from SCWA and participating retail water providers, upgraded water meters, and external sources, such as the United States Geological Survey and the National Weather Service, the system provides collaboration tools that allow all stakeholders to share and access information.

The system consolidates and analyzes the data, which is then made available through a web portal. Dashboards provide a collective view and new levels of insight into the overall status of the system. In addition, the system provides analytic capabilities that enable users to slice and dice data as needed, rather than having to rely on pre-defined reports. This analysis can include historical trend studies to determine seasonal variations in flow and water quality, on which future decisions may be based.

According to IBM, its system is helping the SCWA increase water use efficiency while balancing "urban, agricultural and environmental imperatives, including habitat improvement and species protection."

"Pressure Control System Helps District Conserve Water", online at: <u>http://www.waterworld.com/index/display/article-display/7017288823/articles/waterworld/volume-28/issue-4/departments/automation-technology/pressure-control-system-helps-district-conserve-water.html</u>

#### BACK TO TOP


## Bennington College to host 'Water Dialogues'

BENNINGTON -- Many experts predict that tensions around the world will escalate as the supply of this natural resource diminishes globally: It's not oil. It's water.

Geo-political tensions

While access to water is considered by some a fundamental human right, a limited supply already has led to food shortages, ecological destruction and increased geo-political tensions in regions across the world. With that in mind, Bennington College is hosting a week of events open to the public to bring local, national and global issues to the forefront from April 16-21.

Participants in these Water Dialogues events will include scientists, mediators, artists, students, faculty and policy makers. Admission is free.

Sessions range in topic from lessons learned in Vermont from Tropical Storm Irene to legal issues regarding water quality and quantity to water disputes across the world.

The Water Dialogues is being organized by professor Susan Sgorbatti, who said the conversations fit the college's new Center for the Advancement of Public Action curriculum, which not only looks at the most pressing global issues but also discusses solutions.

The program started with Sgorbatti inviting Clive Lipchin, the director of the Arava Institute for Environmental Studies Center for Transboundary Water Management in Israel, to speak about water conflicts in the Middle East for a conflict resolution class. Then, Sgorbatti said, other water-related ideas started making their way into conversations, and a week's worth of dialogues emerged.

"Once this one presentation was in place, it literally led me to other people and other water conflicts. It started to kind of build itself," she said.

Sgorbatti said the sessions are purposefully called dialogues instead of lectures, because the public is encouraged to engage in conversation at the various events.

"I really want them to be conversations with the public and with people who have more experience with water issues, so that we can all become more informed citizens about this basic human right that we all need to survive," Sgorbatti said. "Once you are informed, people can make more intelligent decisions about how to help resolve the conflicts."

The week's dialogues begin on campus at 12:30 p.m. April 16 with "Everything You Wanted to Know about Water and Were Afraid to Ask," with geologist and Bennington College science professor Tim Schroder.

He will give an overview of the water flow through natural systems and how humans access it around the world. The session will also answer the questions of where water comes from, why it is scarce in



some regions, why water supplies are at risk, and how a changing climate may affect the world's water supply.

As water is a critical resource required for drinking, sanitation and agriculture, Schroder said the entire week's discussions are relevant to understanding how the world works from a scientific and natural perspective. There is a political perspective, as well, as water has become a contentious issue across the world and even in the United States.

For instance, seven states that are part of the Colorado River Compact that governs the allocation of the water rights in the Southwest are consistently in disagreement over how much water each state may use from the river. The topic, Schroder said, was a major contributing factor to John McCain's defeat in Colorado in the 2008 presidential election, when he suggested the 1922 compact should be renegotiated so the southern states could utilize more of the river flow.

Globally, there are greater water conflicts, such as the dispute between Israel and Palestine over the amount of water from the Jordan River the Israelis use, which leaves Palestinians with little. Similar conflicts exist elsewhere, and Schroder said they will worsen as the need for water grows.

"The population is growing and the practice of irrigation and agriculture is growing. As people industrialize and develop more complicated lifestyles, the conflicts will escalate," Schroder said.

Specific to Vermont are other sessions -- one of which includes Deborah Markowitz, secretary of the Vermont Agency of Natural Resources, and David Mears, commissioner of the Department of Environmental Conservation, on Wednesday about the impact climate change has had in the state, lessons learned from Irene and preparing for increased rainfall that is predicted in the region.

Another session, on Monday, features Bill Scully, a restaurant owner and the food service director at the college, who will speak about his own plans to create a hydro-electric facility in North Bennington.

The events will end with a daylong celebration at Lake Paran in North Bennington.

"Bennington College to host 'Water Dialogues'", 04/04/2012, online at: http://www.benningtonbanner.com/local/ci\_20328933/college-host-lsquo-water-dialogues-rsquo

BACK TO TOP



### Master plan to combat threat of water shortages

ABU DHABI - The Environment Agency Abu Dhabi (EAD) said it had developed a strategic plan for the management of the Emirate's water resources to combat the threat of severe shortages in future, delegates at the Agribusiness Outlook Forum in Dubai were told today.

The master plan calls for the adoption of stringent eco-friendly measures to increase water production in Abu Dhabi and urges government implementation of water policies to reduce wastage, according to EAD's press release.

EAD's Water Resources Manager Dr. Mohamed Dawoud said Abu Dhabi has one of the highest per capita water consumptions in the world, with an average consumption of 550 litres of water per person per day.

"This consumption, combined with the predicted population growth in Abu Dhabi to 3.5 million in 2030, means we could face severe water shortages in the future, and need to rethink about water usage efficiency now," he added.

"The Emirate has witnessed rapid development in the last four decades, resulting in immense pressure on water usage," he added. "This master plan is an initiative that seeks to implement measures for limiting depletion of natural resources, and at the same time increase water usage efficiency in different sectors, including the agricultural sector."

"Governments are making efforts to improve water usage efficiency in agriculture through four main pillars - policy and strategy, technologies, legislations and regulations, and education and awareness to increase the economic value of water and efficient use by farm owners," he said.

EAD's official was addressing delegates on the Abu Dhabi government's approach for improving water use in agriculture and the role of the 2030 Master Plan at the Agribusiness Outlook Forum. The forum is a feature of the AGRA and VET Middle East exhibitions at the Dubai International Convention and Exhibition centre, which concludes tomorrow Wednesday.

He said investment in the latest agricultural technologies and automated irrigation methods, such greenhouses using hydroponic systems, can save up to 40 per cent of water in agriculture, and deliver healthier produce.

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(DuBiotech). VET Middle East is officially supported by the Abu Dhabi Food Control Authority, with scientific support coming from CVR Laboratories.

"Master plan to combat threat of water shortages", 03/04/2012,online at: http://www.khaleejtimes.com/DisplayArticle08.asp?xfile=data/theuae/2012/April/theuae\_April107.xml&section=theuae

BACK TO TOP



## \* Abu Dhabi forms new water strategy

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"Abu Dhabi forms new water strategy", 04/04/2012, online at: http://www.tradearabia.com/news/ENV\_215413.html

BACK TO TOP



## \* 'A Tour of the New Geopolitics of Global Warming

Climate change is already shaping conflicts around the world--and not for the better

Energy <u>security</u> and climate change present massive threats to global security, military planners say, with connections and consequences spanning the world.

Some scientists have linked the Arab Spring uprisings to high food prices caused by the failed Russian wheat crop in 2010, a result of an unparalleled heat wave. The predicted effects of climate change are also expected to hit developing nations particularly hard, raising the importance of supporting humanitarian response efforts and infrastructure improvements.

Here's a look at several geopolitical hotspots that will likely bear the unpredictable and dangerous consequences of climate change and current energy policies.

#### Yemen and the Middle East

The Middle East's oil reserves have served as the flashpoint for conflicts, and military leaders are keeping a close eye on Yemen these days, as the country suffers through instability related, in part, to <u>water</u> shortages, which are expected to worsen with climate change.

The region's major energy trade route runs just off the Yemeni shoreline, making it vulnerable to attack or blockade by pirates or other insurgent groups. "It's seven miles from the Yemen coast to the shipping lane. You can row out, and you don't even need an onboard motor," said Neil Morisetti, a rear admiral in Britain's Ministry of Defense and the U.K.'s climate and energy security envoy.

An energy-transport shutdown could cripple the global economy, he added.

#### The Arctic

Melting sea ice poses several unprecedented challenges to defense missions and the global economy, especially once year-round ice floes disappear - a scenario expected within decades.

"When that happens, the whole ball game changes," said Bob Corell, a lead researcher with the Global Environment & Technology Foundation who has headed the U.S. Office for the Global Energy Assessment and extensively studied the Arctic region.

Corell said Asian countries, including China and South Korea, are already plotting new navigation routes and building cargo ships that can push through seasonal ice. The shift would eliminate some travel that now passes through the Straits of Malacca, between Malaysia and Indonesia, where piracy remains active, but it could also enable Asia to take firm control of global trade.

The U.S. Navy is working on developing instruments that can withstand the harsh <u>weather</u> conditions, and planners anticipate an increased presence in the high Arctic.

#### Africa

Considering the extent of food and water scarcity throughout many parts of Africa, the continent is



highly vulnerable to projected droughts associated with climate change, Corell said. Long-term drought in Sudan contributed to the ethnic cleansing in Darfur, he added. The conflict also exposed how poorly prepared the international community is to respond to such scenarios.

Expect this to play out again and again in the future, Corell warned. "There are going to be Darfur's all over the place."

#### **Bangladesh and South Asia**

Between increases in coastal flooding and the drying up of Himalayan glaciers, populations in south Asian countries are already facing disasters and a decline in freshwater supplies.

The Navy's Task Force Climate Change fears that floods or food shortages in Bangladesh could trigger mass migrations to India, increasing ethnic conflict and repression in the region as families compete for resources and survival.

Rippling beyond the subcontinent, the region's manufacturing supply chain, which produces electronics and vehicles for the rest of the world, was already disrupted by flooding in Thailand last year, added Morisetti.

"A Tour of the New Geopolitics of Global Warming", 02/04/2012, online at: http://www.scientificamerican.com/article.cfm?id=the-new-geopolitics-of-global-warming

BACK TO TOP



## **Water Part III: Get the Salt Out**

"If we could ever competitively, at a cheap rate, get freshwater from salt water, that would be in the long-range interest of humanity and would dwarf any other scientific accomplishments" - President John F. Kennedy April 1961

I love this quote from President Kennedy. As an engineer and a "science-guy" I enjoy the notion that the president who led the charge to put a man on the moon also appreciated the significance of something as seemingly mundane as removing salt from water.

If President Kennedy were alive today, he would see that his focus on water supply was spot on. The world is currently suffering from what can only be described as a serious water crisis. Worldwide, one in six people lack access to safe drinking water and one in three do not have sufficient water for adequate hygiene and sanitation. According to water.org approximately 3.6 million people die each year due to lack of clean water. Shortages of clean water impose a disproportionate burden on women and girls who are usually assigned the laborious and time-consuming task of fetching water. In many parts of the world, this prevents girls from attending school, impairing their chances for a more prosperous life. Under the leadership of Dr. Jamie Bartram, UNC has devoted significant resources and focus to this critical global issue with the formation of the <u>Water Institute</u>. In addition, UNC has recently declared a new two-year, campus-wide academic theme focused on water, Water in Our World. Last week Dr. Bartram was tapped to join the U.S. Water Partnership, a group recently chartered by U.S. Secretary of State, Hillary Clinton. Go UNC! Given the critical importance of adequate supply, all possible efforts to increase access to clean water must be explored. Last week in "Water Part II: Water, Water Everywhere, Nor Any Drop to Drink" I explained the harm that salt water can cause to land plants and animals. This week I am addressing the changes of getting the salt out. It's simple but expensive.

There are two commercial-scale desalination technologies, distillation and reverse osmosis. Distillation, which accounts for about 85% of all desalinated water, involves boiling the water into steam, which leaves the salt behind, and then condensing the steam back to water. Note that this process mirrors how nature makes fresh water through evaporation followed by rain. Both the addition of heat to boil the water and the refrigeration needed to condense the steam require a tremendous amounts of energy. In reverse osmosis, salt water is pumped at extremely high pressure through a membrane which filters out the salt. Reverse osmosis uses 30% less energy than distillation, but has lower throughput which offsets the energy savings. The energy requirements associated with both of these desalination technologies increase the cost of supplying domestic and agricultural water by a factor of 4 or 5.

There are approximately 12,000 commercial desalination plants around the world, with 70%



of them located in the Middle East. All together these facilities provide only a fraction of 1% of the world's fresh water supply. So you can see that we are still far from President Kennedy's vision.

Given the energy intensive nature of desalination, it will never be able to provide a significant portion of the world's water requirements. The other sources of fresh water are rain and subsurface aquifers (which I will be addressing next week in part IV). In part V, the final installment, I will discuss the necessity and the process for the world's population to come back in to balance with our annual allotment of rain. Please be advised that part V is a bit maudlin.

"Water Part III: Get the Salt Out", 01/04/2012, online at: <u>http://www.chapelboro.com/Water-Part-III--Get-the-Salt-Out/9686450?pid=229849</u>

BACK TO TOP



#### 'Awareness about water management, wastewater is increasing'

Messe München International is a trade show company. Apart from Germany, the company organises trade shows in Asia, Russia, the Middle-East and South America. One of their forthcoming fairs in Germany is IFAT Entsorga, a water, sewage, refuse and recycling fair. While on a visit to India, **Eugen Egetenmier**, MD, Messe München International, spoke to **Anurag More** about the fair in particular and water innovations globally in particular.

## What steps are being taken to make water clean for drinking in Germany?

All cities in Germany, including the rural areas, have very advanced systems with regard to water purification as we have to follow not only German but also European Union standards, which are very high. Germany has a long tradition in environmental legislation and this started in the 60s of the last century and covered not only water but also wastewater treatment and solid waste treatment. It's not by chance that IFAT Entsorga takes place in Bavaria as the first ministry for the environment was established in this state.

## Can a similar model be adopted for India?

It is not easy to transfer the system from one country to another country. India has a different history, it has different regions and different climate zones. Furthermore, Germany is a fully industrialised country and India is an emerging market - so the conditions are different. However for the decision-makers in India, be it municipal, state or union level, but also decision-makers in manufacturing plants or in the consulting companies, IFAT Entsorga can provide information about technology and services or on how to introduce advanced system in India. I am here to raise awareness on IFAT Entsorga. This trade fair offers a huge range of products and services like no other trade fair in this sector.

# Which country has adopted the most practical and adaptable drinking water regulation for potable water?

I don't think that there is something like "the most practical and adaptable drinking water regulation" in general. Many countries try to obtain high standard in their drinking water regulation. All countries in the European Union have nearly the same standard as have the United States, Japan and South Korea or Singapore, for instance.

## How successful is solar water disinfection in purifying the water?

I think this is a very interesting technology which will develop even further in the near future: Right now, several companies are working on UltraViolet (UV) plants or ozone plants in order to contain the so called micro elements - e.g. agricultural pesticides, drugs or alike - which are detected in sewage water. And besides the solar water disinfection, we always have to bear in mind that solar energy is often used for operations of plants.



## What are the new innovations happening globally to purify water for drinking?

Worldwide, as it becomes ever more important to conserve water resources, not only the purification of water but also the reuse of wastewater is playing an increasingly significant role. In agricultural irrigation, treated wastewater is an excellent alternative, and one that saves valuable resources. In addition, another hot topic is the aforementioned development of ozone and UV plants which shall help to cleanse water of micro elements. As you can see, there are many different approaches on how to handle the very valuable resource water.

# What is your opinion on recycling of plastic for food packaging? What alternative can be used for food packaging?

An important factor for recycling in general - and recycling of plastic for food packaging is a part of that, too is actually the system which is used or implemented for the recycling of these packages. Recycling or the recovery of so-called secondary raw materials becomes more and more important as we have limited resources, i.e. natural resources. That's one reason why this special industry sector is on the rise in the industrial area. The alternative can be how to compose plastic and how to recycle it.

# As a third-party observer, can you pinpoint at the issue faced by India in providing potable water?

A big challenge is the fact that water is being taken as granted. I think the value of this precious good is sometimes not estimated enough. However I am sure that in the near future water will have its price in India as well and therefore will be estimated as valuable. Because of that I am convinced that there will be huge investments in the water sector in India, e.g. water plants or alike, which help developing this industrial sector and bring benefits for the entire population.

# How would the IFAT event address the growing needs of various segments and the industry over all?

IFAT Entsorga shows such a wide range in various categories. So, when delegate and buyers come to Munich they can obtain the latest information on novelties and technology trends in the environmental sector.

## By when can we see the same event in India?

I think that the awareness about the value of water, wastewater management and wastewater treatment is steadily increasing. Furthermore, India has a great potential as the infrastructure needs to be improved regarding this kind of services. I am sure that environmental technologies have a great future in India and therefore such an event will surely come to this country sooner or later.

# How many Indian exhibitors are participating in the event? How many Indian visitors you are expecting?

Usually, India isn't a typical exhibitor country but a very strong visitor country. Because of the growing interest in environmental technology in India, we expect more than 500 visitors from India



this year. This would amount to an increase of round about 25 per cent compared to the last show in 2010.

#### Elaborate on the theme and highlights of this year's event?

This year we will have India special event will be held in cooperation with the Bavarian State Ministry of the Environment and Public Health (StMUG), the Government of Bavaria, the Government of Karnataka and GIZ-ASEM (Indo-German Environment Programme, Bangalore office). The event will focus on waste to energy and wastewater to clean water - challenges for India's public and private sectors - opportunities for international technology suppliers.

#### Tell us about the concurrent events happening along with the main event.

A high-calibre events programme is again flanking the range of products and services showcased at IFAT Entsorga 2012. The thing that makes the events programme so impressive is the extraordinarily wide range of topics that it covers. On all five days of the fair, the forums in Halls A5 and C1 will be featuring country and theme specials, panel discussions and presentations by exhibitors. Trade associations and manufacturers will hold practice-oriented live demonstrations of machines and systems at the open-air site. Thanks to its unique programme of supporting events, IFAT Entsorga is a trade fair of opinions, findings, experiences and visions.

"Awareness about water management, wastewater is increasing", 02/04/2012, online at: http://www.fnbnews.com/article/detnews.asp?articleid=31633&sectionid=11

BACK TO TOP



## Wind Turbine that Produces Drinkable Water

# Eole Water develops a miracle wind turbine with the ability to produce hundreds of liters of drinking water per day in remote areas.

French technology start-up <u>Eole Water</u> is working on a wind turbine in the United Arab Emirates that can produce hundreds of liters of water daily from its dry desert air. Tests from the water maker systems (WMS) have already proven that the device is capable of flowing 500-800 liters of water per day through the process of condensation.

Researchers hope to scale up the technology to produce over 1,000 liters a day with a tower-top system. After producing ideal results in the prototype stage, it is believed that the technology would work even better in areas offshore or near the coast where there are higher humidity and wind conditions.

The idea was originally developed by Eole CEO Marc Parent, an engineer who had been reducing his bottled water costs by siphoning the condensation from his air conditioner in the 1990s.

For the Middle East, where water shortage is a reality, the technology could prove to be particularly beneficial for remote communities. Companies like Emerson, Siemens, Danfoss, Carel and Arcelor Mittal have shown interest in partnering with Eole to develop the technology.

"Wind Turbine that Produces Drinkable Water", 06/04/2012,online at: http://www.energydigital.com/renewable\_energy/wind-turbine-that-produces-drinkable-water

## BACK TO TOP



## \* The Right Water Debates in the Wrong Place

The <u>World Water Council</u>, the convener of the <u>World Water Forum</u>, sure knows its market. At their recent global gathering held in Marseille, France, they tapped into the thirst of governments, development agencies and banks, NGOs and private water operators for a conversation about water services and managing the growing water crisis -- as well as a shot at lucrative contracts. Exhibition booths included desalinization companies and private firms like Suez and Veolia, the biggest in the industry. The event had the feel of a trade show and the price tag of the Superbowl, dissuasive to thousands of water justice activists who set up a parallel, <u>alternative peoples' water forum</u> in a dock-side warehouse.

#### Where is UN leadership on water? A Crisis of Water Governance

The first World Water Forum was held in 1997; the Sixth concluded in March 2012. The World Water Council is a private, not-for-profit body with a board <u>weighted towards private water industry</u> representatives and government officials friendly to private water management. The United Nations might appear a more sensible host for a global conversation about world water policy - water troubles are felt locally but the hydrological cycle is turned topsy-turvy globally. Human rights and environmental activists who steered clear of the Forum advocate to move it to the UN. The same opinion was whispered to me by a Forum session facilitator, "but if we say it out loud, this party is over."

One obstacle to this shift is the approximately 27 UN agencies that deal with water. This bureaucratic dispersion mirrors the way most governments back home split administration of water matters. There tends to be one agency administering potable water, another issuing water permits to mine operators, a third overseeing sanitation and no one watching out for watershed protection. Unlike, say, the World Health Organization (WHO), there is no central UN agency for global water. No one leads; into the vacuum steps the World Water Council.

"Would you have a pharmaceutical business federation run the world conference on health?" <u>Pedro Arrojo, 2003 Goldman Environmental Prize winner</u> asked at a non-Forum meeting of civil society organizations and governments. "It would be unthinkable." Which is not to say that there wasn't concern about the UN. Its track record on water is far from stellar. It's true that the General Assembly did approve the <u>human right to water and sanitation in 2010</u>, but that right is already <u>being eroded in Rio plus 20 draft</u> documents. In 1997, the UN approved the <u>Convention on Non-Navigational Uses of International Watercourses</u>, but 15 years later it is still stalled, awaiting implementation. Were the UN to convene the global water gathering, civil society participation might be buried in observer or consultative status. Communities affected by say, a large dam, might have trouble making their voices heard. This is at least partially due to disproportionate influence of the private sector as documented in the Blue Planet Project study, "<u>A Review of Private Sector Influence on Water</u> Policies And Programs at the United Nations."



#### So much public water, so little discussion of public management

A barker handed me a flyer that caught my eye, "Improving Governance and Performance of Public Water and Sanitation Services." Finally, I thought, a conversation about how public utilities can provide a better service. Halfway to the workshop, I read the finer print: the session would discuss how Algiers public authorities contracted with Suez Environment - improving public water by going private!

How do you explain this disproportionate focus on private water services if, as Gerard Payen, president of the <u>private water operator's federation</u>, <u>Aquafed</u>, states, only 10% of water systems are privately run? The answer, it seems, is equal measures private entrepreneurism and public cowardice. Put yourself in the shoes of a public official surrounded by propaganda alleging public sector inefficiency. Is providing water to your constituents giving you a headache? Is the water workers union making your life miserable? We are here to help. Friends at development banks can train you to set contract benchmarks - as they condition loans to require privatization. Public authorities squeezed by fiscal crises may be happy to get water operations off their books. Heck, if transparency is opaque, they might even reap some personal gain.

There was grumbling at the Forum that the public-private debate distracts from ensuring water to the billion plus people without. Isn't there a role for private enterprise in this urgent and giant undertaking? On that, there's agreement; what's in question is the private sector's best role. Advocates for managing water as a shared public commons express concern that private providers and markets may not serve the best interests of the next seven generations - their measure of forward-thinking water management. The <u>Center for Public Integrity's recent failing grades</u> to states for corruption suggests pause in relying on public-private partnerships to implement the right to water. Sure, public utilities need training to improve performance, but enforcing a public contract with a private operator requires new skills as well. And public accountability to improve performance doesn't exist in places like <u>Jakarta where civil society groups have battled</u> long and hard just to obtain a copy of the durned contract. Private operators have been reluctant to deliver water to neighborhoods where full cost recovery is tough. It's hard to see how source and watershed protection - requiring expensive engagement in complex political processes -- squares with a private operator's bottom line. Yet these are essential practices for water management in a world of growing water scarcity.

Bizarrely, water utility workers were marginalized at the Forum. <u>Public Services International</u>, a federation of public sector trade unions with affiliates in over 140 countries knows a lot about water delivery. They make sure it arrives in millions of homes and would seem a good constituency to involve in discussions about how to manage water better. Yet they were relegated to "side event" status, paying 598 euros to host a non-official session for one hour.

#### New currents in water management and water governance

Whereas the World Water Forum had a corporate vibe, the alternative forum, <u>FAME</u>, felt like an Occupy event. Alex Kastrinakis, paced the stage agitatedly, describing a fast-moving Greek tragedy. The Greek government is holding a fire-sale, auctioning off Thessaloniki's water system for a paltry 74 million euros. In 2011 it made over 20 million euros. <u>Movement 136</u> aims to involve citizens in



water governance by <u>buying the utility as a consumer cooperative</u> at 136 euros per household before it is sold to a private bidder.

Without question, the drum-beat at FAME was beating back privatization and shaping the right to water into something tangible for thirsty families. At the same time, an Andean farmer described community water management and stewardship: how farmers manage a centuries-old irrigation system. <u>Our Water Commons</u> presented the case of the NYC Water Authority as a far-sighted example of <u>city officials and upstream farmers co-designing a watershed-friendly</u> agricultural program and financing it through consumer charges.

The <u>Municipal Services Project</u> launched a new case study publication entitled <u>Alternatives to</u> <u>Privatization</u>, investigating public options for essential services. Spokespeople for communities affected by mining - including in environmental champion Bolivia - painted a frightening picture of water abuse by extractive industries and described a crisis between economic growth and environmental protection/justice. UN Special Rapporteur on the Right to Water and Sanitation, <u>Caterina de Albuquerque alerted advocates that the UN right to water was being diluted</u> in the World Water Forum's Marseille declaration. When the microphones quieted, out on the street under the stars, a bearded conductor led a honk band through trombone solos and acapella riffs.

To be fair, even if tainted by water privateers, the World Water Forum was more than a trade show; there were important debates. Dr. Rafiq Al-Husseini, from the <u>Secretariat of the Union for the</u> <u>Mediterranean</u> rejected full cost recovery from households and insisted that larger users (agriculture and industry) pay their full share. Other speakers suggested that free basic water ought to be as normal as free basic education, financed through cross-subsidies. The elephant in the room was that recovering higher tariffs from agribusiness and industry likely means higher prices on a range of products - but at least poor households won't be unfairly picked on. Pricing was a theme notably thin at FAME; water and money still seem to remain something of a no-go zone among many human rights advocates which opened them up to criticism that they don't have workable proposals for financial sustainability of water systems.

At a high level panel on water and food security co-organized by the UN Food and Agriculture Organization (FAO), panelists proposed supporting small-scale agriculture through recognizing their resource rights, offering public credit, devolving governance of irrigation water regionally and funding small farmers for their watershed stewardship work. Other sessions took up how to implement the right to water and Anne Le Strat, Paris' deputy mayor, shared lessons about <u>Paris' experience in re-municipalizing their water services</u>. Although these conversations were few relative to the number of pro-privatization sessions, there are clearly bridges to be built between FAME and World Water Forum participants.

## Giving water democracy meaning

At both forums, public participation was a kind of water management mantra. There wasn't disagreement as to whether participation was valuable, just skepticism that it's often just window dressing. So-called multi-stakeholder dialogues can be monologues between political unequals that don't crack open decision-making.



The alternative to pro-forma consultation is something more dynamic - getting community hands muddy in monitoring water quality, debating pricing at public hearings and mapping water sources with utility workers. This engagement is sometimes described as <u>exercising water democracy and</u> <u>water citizenship</u>. But here's the rub. Water is embedded in everything. It's essential to public health, a key input for manufacturing and food can't be grown without it. Water democracy means democracy. Period. The sorry state of our water underscores fundamental weaknesses in national democracies and the UN system. Achieving water democracy is surely a terrific opportunity to fix governance problems from the local to the global, but it's one enormous task. The drift towards elite private global governance doesn't help -- the World Economic Forum in Davos is a case in point. With water so central to the economy, it's not surprising that self-interested parties seek governance of water for private gain.

<u>Rio plus 20</u> is the next big global water debate and test of water democracy. As a binding UN conference, it is much more significant than the World Water Forum. Will Rio be a step forward or backward for the kind of water governance and management consistent with future generations' -- of both people and nature -- needs? Climate change has policy makers frightened and ecologically-based planning gets an occasional nod. But <u>early indications are that the draft Rio declaration backs</u> away from the human right to water and looks to markets to resolve the water crisis.

The water commons is rising -- alongside a view of water as a green commodity to be bundled like mortgages and traded on financial markets. The much desired win-win is hard to find between these divergent views. Chances are that some water practices, fracking for instance, can't be reconciled with a safe water future. Some energy companies and politicians will surely be unhappy when a world wide ban on fracking is won or when the Keystone pipeline is finally killed. The good news is that good water management is not rocket science - former New York City Director of Water and Sewer, Albert Appleton, said it simply, "a good environment makes good water."

There are a lot of smart and unrecognized water commons champions out there - from local mayors to utility workers to public agency bureaucrats to small farmer organizations. Adhering to <u>basic</u> <u>human rights and ecological principles</u> -- and shouting until we're hoarse at Rio and beyond -- we might just weather the storm.

"The Right Water Debates in the Wrong Place", 02/04/2012, online at: <u>http://www.huffingtonpost.com/daniel-moss/the-right-water-debates-i b 1396293.html</u>

BACK TO TOP



### ✤ Nigeria rated low in water sanitation implementation

NIGERIA has been rated low in the implementation of the water sanitation policy.

The country, which scored 54.8 per cent in 2010, as against the 58 per cent it recorded in 2010, is striving to attain 75 per cent by 2015.

The National Project Coordinator, Urban Water Sector Reform of the Federal Ministry of Water Resources, Mr. Benson Ajisegiri, said the statistics showed that the country was not making enough progress.

According to him, the studies have shown that less that 50 per cent of the 36 states have policy on water sanitation.

Speaking in Lagos at a stakeholders' forum on water supply and sanitation policy, Ajisegiri said state governments must plan their strategies and develop policies to meet the Millennium Development Goals (MDGS) targets for the nation.

He described the nation's water sanitation rating from 38 per cent in 2008 to 31 per cent in 2010 as unacceptable, saying it showed a decline.

He said he believed that the conscious efforts made by Lagos and other states to develop a water sanitation policy and the steps and guidelines adopted to meet their own target would go a long way in helping the country to attain the 75 per cent water supply target in 2015.

His words: "National target for us is to achieve 75 per cent, but it is not the same in the 36 states. So, if state governments have to plan their strategies and develop policies, we will achieve the target."

Ajisegiri said he was delighted in the consultative process of developing a water sanitation policy in the state, describing the document as a roadmap to satisfy stakeholders.

"Under water reform, which includes development of water supply and sanitation policy, we are almost concluding the process for Lagos. There has been a lot of consultations here, hence the robust document," he said.

The Managing Director of the Lagos State Water Corporation, Mr. Shayo Holloway, said government has concluded plans to assist the corporation in developing legislation in the implementation of the policy.

Holloway said the workshop provided a platform for an effective consultation and communication in the water and sanitation sectors for meaningful deliberation in the development of the needed policy.

Lagos State Commissioner for the Environment, Mr. Tunji Bello, noted that the drive of the state government to improve service delivery in water and sanitation sectors was being hampered by lack of a state water and sanitation policy.



He described the workshop as not only timely but heartwarming, saying it has put the state on the right track towards the delivery of safe water and sanitation services to the people.

"An organisation will be groping in the dark it if attempts to implement a development programme without a statement of intentions, targets and strategies of achieving the targets, and the roles of stakeholders in achieving the targets," Bello said.

"Nigeria rated low in water sanitation implementation", 06/04/2012, online at: <u>http://www.thenationonlineng.net/2011/index.php/news/42203-nigeria-rated-low-in-water-sanitation-implementation.html</u>

#### BACK TO TOP



### \* Iran sanctions scupper Ethiopia's power exports

# United Nations sanctions imposed on Iran will impact negatively on Ethiopia's ability to commence power exports to neighbouring countries, it has been learnt.

Ethiopian utility company, Ethiopian Electric Power Corporation (EEPCo) awarded a construction tender to an Iranian company, but the sanctions mean it will be difficult to carry out financial transactions, thereby stalling the power export project.

Iran Power & Water Export of Equipment & Services Company (IPWEESC) was, in 2008, awarded US\$9.6 million tender to install substations in Bahir Dar and Gonder in Ahmara Regional State, with the project expected to be completed within 18 months.

EEPCo has also paid close to 60 percent of the contract amount to the Iranian firm, but the sanctions mean it will not be able to pay the rest, further stalling progress.

Due to the sanctions, we could not effect payments for the outstanding balance

The UN Security Council resolution calls for the freezing of assets of Iranian companies and urges member countries to monitor the activities of Iranian banks, as these are barred from transferring funds.

"Due to the sanctions, we could not effect payments for the outstanding balance," an official told Ethiopian media, on condition of anonymity.

The Iranian deal is part of an ambitious project by the Horn of Africa country to become a regional power house in exporting power. The project, funded by the World Bank with a loan of US41 million, ideally would have seen power exports beginning in May 2012.

As a solution, the World Bank is reported to have allowed EEPCo to deal directly with the four foreign vendors of the Iranian company, Philips of The Netherlands, Ericsson of Sweden, TBEA of China and Areva of France. This will facilitate the delivery of equipment upon the payment of the outstanding amount.

Negotiations between EPPCo and the foreign companies have since started.

EEPCo has already overseen the completion of a 296 kilometre power transmission line carrying 230 kilovolts. It was expected that Sudan would, by now, be linked to Ethiopia's power grid, had the substations been installed.

Although power exports to Sudan may start with 100 megawatts, the plan is to eventually increase it to 1,200 megawatts within eight years, when a series of dams on the Blue Nile River are completed.

"Iran sanctions scupper Ethiopia's power exports", 03/04/2012, online at: http://www.theafricareport.com/index.php/east-horn-africa/iran-sanctions-scupper-ethiopia-s-power-exports-501808618.html



#### **\*** Dredging the Nile tributaries will not solve rising food prices in South Sudan

#### To whom it may concern:

Government of South Sudan (GoSS, Greater Bor Community, Atuot Community, Aliap Community, Bahr el Ghazal Community, Nuer Community, Shilluk Community, Yirol Community, Mundari Community, Murle Community, Equatoria Community, Ngok Community, Misseriya Community, and South Sudan Youth.

It came to my attention that Egypt's company has begun their project to dredge Nile tributaries this month. William Gatjang Gieng, Unity State Minister of Environments and Natural Resources in Unity state, said "that the teams from the Egyptian company are working to deepen the river to allow more boats to transport goods and people. One team will dredge the Naam River from Rubkotna junction in Unity State to Lake No just north of the Sudd swamp, where the Bahr el Ghazal River meets the River Kiir. Another project will start from Wetmachar Achol in Wau, the capital of Western Bahr el Ghazal State, to Wangkeay Bridge "(Borglobe). The question is what are the advantages and disadvantages for this project to the Sudd Wetlands in South Sudan? It should be apparent that Egyptian government will take any opportunity to increase the Nile water flow by drying up the wetlands since Jonglei Canal scheme failed during the civil war.

It is obvious that South Sudan depend on food transported from Kenya, Uganda, and Sudan. I wonder why South Sudanese are reluctant to farm nowadays. Perhaps insecurity and the new found wealth from oil is derailing agricultural production. John Kudusay once asked in his song, "who is the UN"? He says, "the UN is like us. He's born like us and then he goes to school. After finishing school, he then go around the world and help those who need help". It would be nice everyone in South Sudan had this mentality. "The government hopes that improving river transport will allow goods and services to flow more freely and make it easier to trade and do business" (Borglobe). Despite the rise of food prices in Unity state, is this project necessary to spend 26.6 million dollars instead of building better roads in South Sudan? Why rush and clean the Nile River knowing South Sudan and Sudan have many issues that can return both countries to war? God forbid the SAF will not use the Nile River to attack the Republic of South Sudan if both countries were to return to war.

The attempt to dry up the Sudd in South Sudan was first envisioned by the Britain and Egypt government who jointly ruled Sudan in the 1930s. This project came be known as Jonglei Canal. The goal was to provide 20 million m3 of water per day to Egypt for agriculture use. "The project would shrink the wetlands by approximately 40%. A second phase for the project was also planned, which would completely dry up the wetlands" (Allen, 2010). However, this project never materialized until it was resurrected in the 1970s by Nimeiri government. Nimeiri believed that the Jonglei Canal would facilitate "national development" in South Sudan. Obviously, Nimeiri had no intention to develop South Sudan. Despite the opposition by politicians from South Sudan, Jonglei project proceeded. Lucky, the SPLA derailed the construction by destroying the equipment sometimes in 1983. "The Sudd Wetlands, located in Southern Sudan, is one of African's largest wetlands (30,000-40,000 KM2, formed from the spillage of water from the Nile. The wetland supports a diversity of ecosystems with a reach flora and fauna" (IWMI), 2008).



#### Who will be affected if sudd wetlands dry up?

The Dinka, Nuer, and Shilluk pastoralists tribes depend on the sudd to graze their livestock, and for farming during dry seasons. Not only that, Sudd provides enormous fish production for local people who live in rural areas. In fact, if it wasn't for these swamps during Sudan's civil war, majority of civilians would have starved to death. There is no doubt if the Sudd wetlands dry up, South Sudanese will have to transport fish from neighboring countries. I would argue that if were not for sudd wetlands, the Sudanese Armed Forces would have weakened the SPLA because they could have easily navigated through the Nile River by boat. The question is what will these tribes do when these areas dry up? Perhaps the Government of South Sudan (GoSS) is tired of the killing caused by cattle rustling. Clearly, if these areas dry up, Sudd wetlands will experience a decrease of rainfalls and an area about 30,000 square kilometer will become a desert. Can the GoSS afford the sudd wetlands to dry up so the Nile River is passable by boats?

Secondly, the GoSS can't ignore the vegetation and ecosystem that would be lost if this vast region becomes a desert. The question is what will happen to 400 species of birds and animals that rely on these wetlands? There is no doubt these species will die, and the Nile River will never be the same again. In 2008, Kenyan wildlife tourism was around 70% of Kenyan total revenue. The Sudd wetlands is a potential tourist destination if the GoSS invest their time instead of letting the Egyptian government exploit their vulnerable position.

In conclusion, the GoSS needs to stop this project immediately because it will change many lives in South Sudan. The GoSS need to look at the long term affects instead of relying on short term solutions. It doesn't take a rocket scientist to figure out the catastrophe this project would cause to many species in South Sudan. I hope bribery didn't influence the minister's decision. What's the difference between Jonglei Canal and dredging of the Nile River? Why can't the GoSS use 26.6 million dollars to connect many roads in South Sudan instead of relying on the river for transportation? Why can't the government use these funds to develop agricultural production instead? Until the Nile water agreement of 1929 is abolished by the riparian countries, the GoSS needs to be careful because the Egyptian government doesn't serve the interest of South Sudan.

The minister should consult external experts who have no interest in the Nile River. Secondly, Sudd wetlands need to be surveyed first to understand who will be affected by the project. If the GoSS allow this project to continue then why not let the Jonglei Canal resume. Lastly, I urge the Dinka, Nuer, and Shilluk tribes who rely on the Sudd wetlands to alert their governors, commissioners, and their chiefs to alert the government about the disaster this project will do to the ecosystem. This project will affect these tribes in the short term, but the entire country will regret this in the future. Failure to act will lead to water wars within South Sudan years from now. The Dinka and Nuer will no longer have "toch" to graze their livestock during dry season. The Nilotic cultures will be lost, and everyone will have to move to 'modern cities' and abandon the so-called "backward society". Maybe this is one way to uproot the Nilotic culture indirectly. Most importantly, fishing will be limited unless one has modern equipment to fish in a 'deep Nile' River. Let's not have rising food prices influence our decision. This problem can be solved easily if everyone gets their act together by holding their constituents accountable. We can't keep saying if Dr. Garang de Mabior was alive today, South Sudan will be a better place. There is no doubt if he was alive, things might be different, but mourning him every day will not do us any good! Dr. Garang de Mabior and his comrades



emancipated South Sudanese from Bashir's regime, but now it's our turn to carry on the torch. Wake up Southerners, this project will turn the Republic of South Sudan into a desert. It's not too late to stop this project.

"Dredging the Nile tributaries will not solve rising food prices in South Sudan", 02/04/2012, online at: <u>http://www.borglobe.com/25.html?m7:post=dredging-the-nile-tributaries-will-not-solve-rising-food-prices-in-south-sudan</u>

#### BACK TO TOP



## Feature: Indian water industry: Future prospects & Way ahead

Water is essential for ensuring socio-economic development and maintaining healthy ecosystems.

At this time, there are over seven billion people to feed on the planet and another 2 billion are expected to join by 2050. Statistics show that each of us drinks about 2 to 4 litre of water every day, however most of the water we "drink" is embedded in the food we eat: producing 1 kilo of beef for example consumes 15,000 litre of water while 1 kilo of wheat "drinks up" 1,500 litre.

When a billion people in the world already live in chronic hunger and water resources are under pressure we cannot pretend the problem is "elsewhere."

As per the recent scarcity of water reports of the World Economic Forum titled The Bubble is Close to Bursting: A Forecast of the Main Economic and Geopolitical Water Issues Likely to Arise in the World during the Next Two Decades; Water Security: The Water-Food-Energy-Climate Nexus and others the demand for water is expected to increase continuously, while it is estimated that there will be 40 per cent global deficit between the projected demand and available supply by 2030.

S Siddiqui, senior f&b industry analyst, notes that as population increases and development calls for increased allocations of groundwater and surface water for the domestic, agriculture and industrial sectors, the pressure on water resources intensifies, leading to tensions, conflicts among users, and excessive pressure on the environment. The increasing stress on freshwater resources brought about by ever rising demand and profligate use, as well as by growing pollution worldwide, is of serious concern.

#### **Critical challenge**

Like other countries, in India too water security is one of the most critical challenges faced today. Drinking water problems in the country are quite different from those in developed countries. Here, the main concern is with disinfecting the potable water at the point of use.

Meanwhile, the rising number of drinking water contamination, pollution and water-based illness like typhoid, diarrhoea and leptospirosis cases has routed urban, tier I & II people to espouse bottled water or install water purification tablets. "The current scenario has the potential of evolving into a crisis, unless key stakeholders i.e. public-private-civil society coalitions, come together to deliver the right solutions. Water management, desalination, water treatment and reclamation, water safety and security, agricultural water usage, and water IT and communications are areas that need to be focussed on collectively to achieve the maximum advantage for ensuring a balance between the demand and supply for water," Siddiqui adds.

#### Water treatment in India

India accounts for 2.45 per cent of land area and 4 per cent of water resources of the world but represents 16 per cent of the world population. With the present population growth rate (1.9 per cent per year), the population is expected to cross the 1.5 billion mark by 2050. The Planning Commission of India has estimated the water demand increase from 710 BCM (Billion Cubic Meters) in 2010 to almost 1180 BCM in 2050 with domestic and industrial water consumption expected to increase almost 2.5 times.



Water and wastewater treatment describes those processes used to make water ore acceptable for a desired end-use. These can include use as drinking water, industrial processes, medical and many other uses. Traditionally in India, the point-of-use market has been dominated by ultraviolet purifiers and filters for water decontamination.

Azim Shaikh, manager, OxyBlue, a packaged drinking water brand, said, "The goal of all water treatment process is to get rid of existing contaminants in the water, or lessen the concentration of such contaminants so the water becomes fit for its desired end-use. One such use is returning water that has been used back into the natural environment without adverse ecological impact.

"The water treatment practices involved solids separation from water by using physical processes such as settling and filtration, and chemical processes such as disinfection and coagulation. Biological processes are also employed in the treatment of wastewater and these processes may include, for example, aerated lagoons, activated sludge or slow sand filters."

For drinking quality requirements, the water treatment processors throughout the world obey World Health Organisation (WHO) guidelines. In addition to the WHO guidelines, each country or territory or water supply body can have its own guideline in order for consumers to have access to safe drinking water.

In India, government bodies like Bureau of Indian Standards (BIS) act as controller for water- based products and their certification.

#### **Opportunities**

In a research paper titled Indian Water and Wastewater Treatment Market Opportunities for US Companies by the New York-based Virtus Global Partners, Inc. in association with India-based ICRA Management Consulting stated that the Indian water and wastewater market is growing at a rate of 10-12 per cent every year. The current market size is over \$4 billion.

"The government related projects contribute over 50 per cent of revenues in this market while the private sector contributes the rest. The water and wastewater treatment market segment is highly fragmented and unorganised. Imports constitute approximately \$110 million of the \$690 million market for municipal and industrial water treatment equipment," it stated.

"The Indian water and wastewater industry is growing at a tremendous rate every year. The water industry has become a key sector of growth and development. India is poised to grow in the water technology segment and will soon become a force to reckon with in the global water business, with its improved infrastructure, water delivery, and inventive technology," Prof. Dhananjay Pashte, head of the department of economics of a Mumbai-based degree college told F&B News.

Shaikh stated, "The growth in water and wastewater treatment segment is anticipated to remain steady but this industry suffers from a serious dearth of qualified professionals. Hence, the water and wastewater industry offers exciting career opportunities across the world."



#### Technology

The Central Pollution Control Board (CPCB) under the ministry of environment and forests said that the raw water quality available in the country varies significantly, resulting in modifications to the conventional water treatment scheme consisting of aeration, chemical coagulation, flocculation, sedimentation, filtration and disinfection. The backwash water and sludge generation from water treatment plants are of environment concern in terms of disposal. Therefore, optimisation of chemical dosing and filter runs carries importance to reduce the rejects from the water treatment plants.

At present, technologies like membrane filtration through membrane bioreactors, aerobic biological treatment processes - conventional activated sludge process (ASP) system, and desalination with UF pre-treatment are few which are widely used in sophisticated water & wastewater treatment.

#### \$100 bn outlay to décor water business

The Central government is currently implementing a \$100 billion project to interlink all major river networks in India. This initiative would connect water-deficient areas to water-abundant ones by interlinking 37 Indian rivers. One of the largest projects anywhere in the world, it would transfer water through 30 links across 9,600 km. It would connect 32 dams and use 56 million tonnes of cement and 2 million tonnes of steel. It would bring with it a huge requirement for water treatment & purification management, transmission and distribution.

India's water transmission and distribution networks are outdated and poorly maintained. The government has recently viewed privatisation of these networks as the only option. Water companies from all over the world have established a presence in India to pursue an estimated 70 projects worth several billion dollars in 20 Indian cities.

Further, the ministry of water resources is likely to bring out new National Water Policy soon. In one of the press conferences recently in the national capital, minister for water resources informed that the Centre has formulated a new Water Policy, which would incorporate the Central issue of governance, including all aspects like environment and development, the states were also free to formulate their own policies as water was a "state" subject.

As per Central government statistics, over 75 per cent of the rural population and 85 per cent of the urban population have access to public water supplies. However, municipal agencies in many Indian towns and cities are unable to increase their water supply capacities to match population growth, especially in the urban areas. Water requirement for industrial use alone is expected to quadruple from the current 30 billion cubic meters to 120 billion cubic meters by 2025.

#### Budget 2012-13

Union finance minister Pranab Mukherjee has raised the allocation for rural drinking water and sanitation for 2012-13 keeping in line with the overall increase in allocation for social spending.

The minister, while announcing annual budget 2012-13, raised the allocation for rural drinking water and



sanitation by about 27 per cent to Rs 14,000 crore from Rs 11,000 crore last year. This amount would also include government spending for promotion of wastewater treatment industry. The sanitation sector has seen a quantum jump of over 130 per cent in allocation, with the budget for the sector pegged at Rs 3,500 crore. Last year, the budget for sanitation was Rs 1,500 crore.

Further, rural development minister Jairam Ramesh, who also heads the ministry of drinking water and sanitation, had been pushing vigorously the agenda of clean drinking water and has called for issues like drinking water and sanitation becoming the main national agenda to ensure a healthy national outlook.

According to media reports, India's record on the sanitation front is considered poor, with a report - Progress on Drinking Water and Sanitation 2012 - released earlier this month by the WHO/UNICEF joint monitoring programme for Water Supply and Sanitation stating that the country is among several others who are still far from meeting the part of the Millennium Development Goal (MDG) target for sanitation.

The report mentions that more than 808 million people, or about 32 per cent of the 2.5 billion living without adequate sanitation globally, are in India and without improved sanitation. Open defecation, in the absence of adequate water facilities, remains a considerable challenge within India.

"Feature: Indian water industry: Future prospects & Way ahead", 08/04/2012, online at: <u>http://www.fnbnews.com/article/detnews.asp?articleid=31640&sectionid=1</u>

#### BACK TO TOP