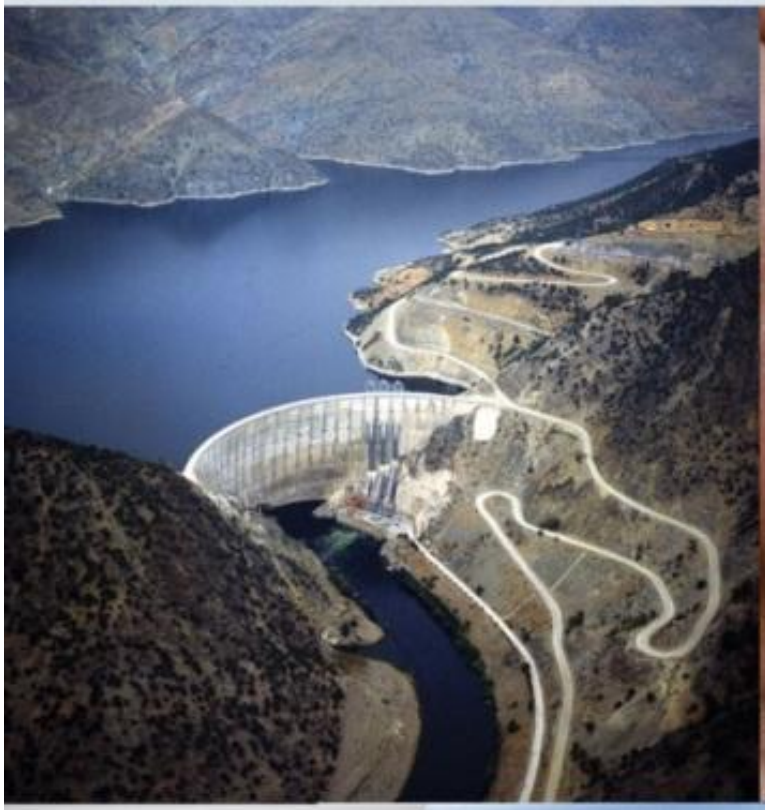


# ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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





**Issue 140**

## ORSAM WATER BULLETIN

**05 August 2013 – 11 August 2013**

- **Water scarcity threatens Iraq with environmental disaster**
- **Iran, strategically important partner for Tajikistan: Tajik deputy FM**
- **Iran To Increase Offshore Crude Production By Water Injection**
- **Water conflicts will increase tensions as rural areas suffer**
- **Water scarcity**
- **New Cyprus water desalination plant to be inaugurated**
- **Israel's National Water Company Mekorot launches Cyprus desalination plant**
- **A West Bank Spring At The Center Of Deadly Struggle**
- **Greece, Cyprus, Israel Energy and Water Deal Signed**
- **China and India 'water grab' dams put ecology of Himalayas in danger**
- **China to regulate water supplies amid waterdiversion**
- **Mbarara faces hard time as River Rwizi dries up**
- **New source of arsenic threatens groundwater in Vietnam, Stanford research finds**
- **As dams loom, Mekong fishermen fear for their future**
- **Officials: Rural NM facing water crisis**
- **Water will cost more than oil**
- **The Battle for Water *by* Brahma Chellaney***
- **Rice gene digs deep to triple yields in drought**
- **Today's Climate Change Proves Much Faster Than Changes in Past 65 Million Years**
- **Water a Key Issue as Developing Countries Drive Growth in Global Food Production**
- **Sudan floods kill 11, affect almost 100,000: UN**



*Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY*
*Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr*

## ❖ Water scarcity threatens Iraq with environmental disaster

The channeling of the water arriving to Oum Al Wadea Island in the center of the marshlands of Dhi Qar has become an environmental threat while relevant authorities ascribe it to damage in the water pumping station.

This paints the picture of the suffering incurred by Oum Al Wadea Island residents as well as its surroundings in Al Nasiriyah's marshlands after water levels decreased due to a governmental decision calling for channeling the water that flows into this region to another one. The scarcity of water took its toll on the residents' lifestyle since they depend on fishing, breeding bullock herds as well as selling bamboo and papyrus.

The local Government and Marshland Rehabilitation Directorate ascribed Oum Al Wadea Island's suffering to water scarcity and a technical fault in water pumping stations which channeled water into Al Basra.

The increasingly deteriorating water levels in the marshlands threaten to turn it into a desert, killing any remaining vegetation or aquatic life form; unless a suitable solution is found.

"Water scarcity threatens Iraq with environmental disaster", 04/08/2013, online at:
http://www.alsumaria.tv/news/80363/water-scarcity-threatens-iraq-with-environmental-d/en

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ Iran, strategically important partner for Tajikistan: Tajik deputy FM

*Tajikistan's deputy foreign minister says the Islamic Republic of Iran is an important and strategic partner for his country.*

Speaking at a press conference in Dushanbe on Friday, Khosro Nazeri said the presence of Iranian President Hassan Rouhani in the forthcoming High-Level International Conference on Water Cooperation in the Tajik capital is of great importance given the lingual, cultural and religious affinities between Tajikistan and Iran.

Nazeri went on to say that Tajik President Emomali Rahmon in his meeting with President Rouhani in Tehran earlier this month had invited him to attend the meeting.

He added that the international conference will be held in Dushanbe between August 20 and 22, and delegations from 60 countries will be in attendance.

The Tajik deputy foreign minister stated that so far statesmen from 30 countries and representatives from 19 international institutions have accepted invitations to attend the event, and 52 more states have voiced readiness.

Nazeri pointed out that a total of 800 experts and officials will participate in the international gathering.

The High-Level International Conference on Water Cooperation aims to contribute to improving water cooperation, especially at the trans-boundary level and encourage cooperation to achieve internationally agreed goals on water.

The meeting will include high-level plenary sessions, parallel side events and thematic sessions on the role of water cooperation in reducing poverty, bringing social justice, economic benefits and peace, as well as protecting the environment.

"Iran, strategically important partner for Tajikistan: Tajik deputy FM", 11/08/2013, online at: http://www.presstv.ir/detail/2013/08/09/318004/iran-strategic-partner-for-tajikistan/

BACK TO TOP

## ❖ Iran To Increase Offshore Crude Production By Water Injection

Iran's offshore oil reserves in the Caspian Sea and Persian Gulf are valued at USD2.75 trillion.

Iran is to enhance oil recovery from its offshore fields by injecting 25 percent more water into them, a senior Iranian oil official says.

Water injection is a method of improved oil recovery (IOR) applied to offshore reservoirs, said Managing Director of the Iranian Offshore Oil Company (IOOC) Mahmoud Zirakchianzadeh on Friday.

"Currently, 400,000 barrels per day (bpd) of water are injected into the IOOC-administered fields aimed at increasing [oil] output. The figure will reach 500,000 to 530,000 bpd this [Iranian calendar] year [which ends March 2014]," the official stated.

Zirakchianzadeh said simultaneous water and gas injection into the Doroud oil field, located off the Persian Gulf island of Kharg in southern Iran, will enhance its recovery rate from 23 to 33 percent.

Iran's offshore oil reserves in the Caspian Sea and Persian Gulf are valued at USD2.75 trillion.

"Iran To Increase Offshore Crude Production By Water Injection ", 05/08/2013, online at: http://www.energytribune.com/78640/iran-to-increase-offshore-crude-production-by-water-injection#sthash.fpOXyDKl.dpbs

BACK TO TOP

## ❖ Water conflicts will increase tensions as rural areas suffer

Three days after the fall of Egypt's president Hosni Mubarak, the then Ethiopian prime minister, Meles Zenawi, announced the start of construction of a dam on the Nile's main tributary. The Grand Ethiopian Renaissance Dam will be the first Ethiopia has built on the river. The move is a direct challenge to downstream Egypt's "hydro-hegemony", which had ensured that it and Sudan enjoy essentially exclusive use of the river, thanks to favourable colonial and postcolonial agreements.

Until 2010, Ethiopia, South Sudan and eight other states were negotiating water sharing under the auspices of the Nile Basin Initiative. These discussions have now degenerated into threats. There is a similarly short-sighted dynamic occurring on the Tigris and Euphrates. Turkish plans to develop the primarily Kurdish south-east are centred on the Southeastern Anatolia Project - a series of 22 dams scheduled to be completed by 2023. Despite considerable resistance from Kurdish and environmental activists, about half the dams are complete, while the associated irrigation projects continue to create water shortages and salinisation for farmers downstream in Syria and Iraq. As in Egypt, the self-interested Turkish approach to international rivers will continue regardless of which party is in power.

Iraq faces a second problem as a similarly ambitious Iranian hydraulic development programme has started on the tributaries of the Tigris. Like their forebears thousands of years ago, the farmers in Iraq must now choose between eking out an existence on their land or moving to urban centres. The Iraqi government struggles to mount a diplomatic response, while the Syrian government clearly has its priorities elsewhere.

Rarely has water been so central to Middle Eastern geopolitics. But a war over water is unlikely; research has shown that power asymmetry and the relief valve of "virtual water" - a state importing food which it can no longer grow - are enough to counterbalance the risks. It is better to ask how cross-border tensions over unfair sharing of water can be reduced through the international norms that form the basis of sustainable water security policy.

These are not simply cases of non-Arab states capitalising on the unrest in downstream Arab states. All of the projects have been on the drawing board for decades. What makes the recent activity of such concern is the convergence of a number of factors: ideas of national development; increasing demand for water; and changes in the relative power of the states involved.

Upstream Ethiopia, Turkey and Iran are building the same infrastructure that downstream Egypt, Syria and Iraq built decades ago. All are propelled by the "hydraulic mission" mindset that governments from the United States to Australia have used to provide water and establish the consent of (or control over) people in distant provinces.

On top of this, growing populations boost demand for fresh water and food that must be met through either imports or irrigating crops. In turn, thousands of engineers are trained (as in Turkey and Iran) to meet that demand, which means more food production that opens up more markets - and lubricates a vicious cycle of unsustainable water consumption. Climate change might or might not be exacerbating water scarcity, but we should be clear about the root causes: man and states, not God or nature.

The people of Syria and Iraq will suffer the environmental, social and political consequences of dam building on the Tigris and Euphrates, just as Egyptians will suffer them on the Nile. Obstruction of the rivers means reduced biodiversity, reduction of the precious sediment transport downstream that rejuvenates fields, the submersion of areas of global cultural heritage and the displacement of villagers. None of these is taken lightly but the political consequences are of equal if not greater magnitude.

These will be felt first by the farmers who require much more water than the average citizen. Politically-connected industrial farmers can generate the funds to meet their water needs but smaller farmers are not so privileged. A reversal of fortunes has occurred in fertile Iraq, as people who used to sell vegetables to their local markets are now obliged to buy them from Turkey and Iran.

Under these circumstances, it is only a question of how and when - not if - the tensions of the water-poor countryside will reach the capitals, and from there play out into political tensions across borders.
The common point in each of these water conflicts is that the most powerful state has done its best to avoid establishing a fair trans-water-sharing regime. International water law - particularly the 1997 UN Watercourses Convention - details the customs agreed between states through the centuries, with "equitable and reasonable use" as the guiding principle. But the most powerful states have paid only lip service to these principles, or ridiculed them. This was most clear with the Mubarak government, which stonewalled on negotiations of the water-sharing clauses in the Nile Basin Initiative's Cooperative Framework Agreement. On the Tigris and Euphrates, the suggestion of guiding legal principles is a non-starter for Turkey.

Had the Egyptian or Iraqi governments sought equitable sharing when they were the more powerful state, their people might today have enjoyed the benefit of a fair and established water-sharing regime.

Now Turkey, Iran and Ethiopia face the same decision: unilateral development of a shared resource, or multilateral and sustained development based on international norms. We have seen how situations of unfair water sharing will endure only as long as the power asymmetry that allows them to develop in the first place. The fallout from these water conflicts can be avoided, but only once all parties agree to compromise for the common interest.

"Water conflicts will increase tensions as rural areas suffer", 05/08/2013, online at:
http://www.thenational.ae/thenationalconversation/comment/water-conflicts-will-increase-tensions-as-rural-areas-suffer

BACK TO TOP

### ❖ Water scarcity

The region of Middle East is at the verge of a serious water crisis.

This issue is likely to dominate world politics in times to come, and even lead nations to war. In the 19th and 20th centuries, it was black gold i.e., oil that was acting as a catalyst in creating power strife among countries who were all in pursuit of power and wealth, but now it seems potable water is turning into the most rare commodity. Estimates from the United Nations and other international NGOs say that around a billion people of the Middle East, North Africa and Asia are likely to suffer from water scarcity. And especially enough Jordan, Palestinian territories and the state of Israel are likely to cross swords if the live-saving commodity falls short of their needs.

Though this problem had been there for quite some times, it is little known as to what efforts had been made to address this issue. The issue needs to be addressed not only in practical terms but also a long-term socio-political solution found between the countries of the region. Until and unless that is done and that too under the aegis of the world body, the irritant is likely to take nations to war. The crises in Africa and food and water scarcity problems over there during the last several decades should serve as a grim reminder. More than a million deaths took place due to changing climatic conditions in the midst of poverty and warfare. The Mideast should be saved from such a catastrophe.

"Water scarcity", 11/08/2013, online at: http://www.khaleejtimes.com/kt-letter-display.asp?xfile=data/letters/2013/August/letters_August41.xml&section=letters

BACK TO TOP

### ❖ New Cyprus water desalination plant to be inaugurated

The new Limassol desalination plant, with a capacity to produce up to 40,000 cubic meters of desalinated potable water daily, will be inaugurated today by President Anastasiades.

Present at the inauguration ceremony will be the Minister of Energy, Industry, Commerce and Tourism Yiorgos Lakkotrypis and the Israeli Minister of Energy and Water Resources Silvan Shalom.

The two Ministers along with the Greek Minister of Environment, Energy and Climate Change, Yiannis Maniatis are set to sign on Thursday a memorandum of understanding covering issues of energy.

At the initiative of Lakkotrypis, the Ministers will discuss issues concerning tripartite and regional cooperation in the energy sector, including the protection of the environment from offshore hydrocarbon activities and the electrical connection of Israel, Cyprus and Greece through the submarine cable.

The new water desalination plant, located in Episkopi village, on the southern coast, is expected to meet the needs of the wider area of Limassol for twenty years.

Construction work for the plant began in 2009 and was completed in the beginning of 2013.

"New Cyprus water desalination plant to be inaugurated", 11/08/2013, online at: http://famagusta-gazette.com/new-cyprus-water-desalination-plant-to-be-inaugurated-p20204-69.htm

BACK TO TOP

## ❖ Israel's National Water Company Mekorot launches Cyprus desalination plant

*Through two plants on the island, Mekorot will be partaking in the supply of about 40% of its water consumption.*

A subsidiary of Mekorot – Israel's National Water Company inaugurated on Wednesday a 50 million Euro desalination plant in Limassol, Cyprus, that will be capable of providing local residents with between 40,000 and 60,000 cubic meters a day for the next 20 years.

Within the framework of an agreement with the Cypriot government's Cyprus Water Development department, Mekorot will be operating the facility through its subsidiary Mekorot Development and Enterprise. Initially, the desalination plant will supply local residents with 40,000 cubic meters of water daily, with the possibility of increasing that output to 60,000, according to the company. Despite the 50 million Euro construction cost, the operational turnover of the facility is expected to produce about 8 million Euros annually.

"In a challenging reality, in which many countries are facing an existing or expected shortage of water, the solutions which Mekorot has to offer are of great importance," said Mekorot CEO Shimon Ben-Hamo. "Israel and Cyprus, two countries small in size but large in their vision – prove that a disadvantage can be made into an advantage thanks to the common [desire for] a fruitful and prosper life."

A port city, Limassol is located in the center of Cyprus's southern shore. Wednesday's launch ceremony took place in the presence of Ben-Hamo, as well as Energy and Water Minister Silvan Shalom, Cypriot Agriculture, Natural Resources and Environment Minister Nicos Kouyialis and the director of Cyprus Water Development Kyriacos Kyrou.

Constructing the plant in partnership with two local firms on the ground, Mekorot Development and Enterprise will hold 50% of the plant operation revenues, while the two Cypriot companies, LOGICOM and DEMETRA, will hold 33.5% and 16.5% respectively.

n addition to the work constructing the Limassol plant, Mekorot Development and Enterprise and its Cypriot partnership are also currently upgrading a second seawater desalination plant in Lanarca,

located on the country's eastern coast. There, the companies revamping the desalination plant so that it is capable of supplying 60,000 cubic meters of water to the city's residents daily, for the next 25 years. The investment in this project amounts to 17 million Euros in total, with an estimated annual turnover rate of 7 million Euros, the companies said.

Through the Limassol and Larnaca desalination projects, Mekorot will be partaking in the supply of about 40% of the island's water consumption, in an effort to curb the increasingly problematic water shortages that Cyprus faces, a statement from Mekorot explained.

"We not only see in Cyprus a neighbor, but a partner to economic projects as well," Shalom said. "The new plant in Limassol and the plant in Larnaca, are further evidence that Israel has great technological and human strength."
Shalom praised Mekorot for the company's devotion "to providing solutions to friends in the region and across the globe," which he said he views as a "commitment to present and future generations."

“Israel's National Water Company Mekorot launches Cyprus desalination plant”, 07/08/2013, online at: **http://www.jpost.com/National-News/Israels-National-Water-Company-Mekorot-launches-Cyprus-desalination-plant-322359**

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ A West Bank Spring At The Center Of Deadly Struggle

There's a pretty little spring in the Israeli-occupied West Bank, where fresh water has dripped from the rock, probably for centuries.

Now it is the center of a deadly struggle over land.

Israeli teenagers from Halamish, the Jewish settlement a short walk uphill, found the spring several years ago. It flows from a small cave.

"The kids were always looking for something to do in the summer," says Shifra Blass, who moved to Halamish, also known as Neveh Tzuf, more than 25 years ago when her husband became the community rabbi. "When they saw that there was water coming out over there, it was very exciting."

The young Israelis saw great potential and acted on it. They piled rocks into low walls to catch the water into pools deep enough to dip in. They brought in picnic tables, planted trees and passion fruit vines, and built a structure for shade. They put up a sign, naming it after one of the founders of the settlement.

They say nobody was using the spring.

"There was nothing here before those kids started working on it. This place was abandoned," says 24-year-old Tziana Ramol, who grew up in Halamish. "I don't think anyone can claim it was his."

**A Palestinian Claim**

Bashir Tamimi does. He says he inherited the land around the spring from his father, who inherited it from his father. Tamimi is from Nabi Saleh, the Palestinian village across the road and up the hill.

Tamimi's face looks older than his 57 years, but he moves lightly. One hot afternoon, he squats in the low cave where the spring trickles out of the hillside, scoops a handful of water from as close to the source as possible and drinks it. He says this is only the second time he's come to the spring in more than three years.

"At the end of 2008, [Israeli] settlers kicked out the [Palestinian] farmers who were using my land," he says. "We went to the Israeli authorities, and they actually removed a fence that the settlers had put up and said this is Palestinian land. But the settlers did not give up the spring."

Tamimi went back to the Israeli authorities and then, with the help of an Israeli legal organization, went to court. The Palestinian villagers also decided to act.

Every Friday afternoon, people from Nabi Saleh and many international supporters leave the village and try to march to the spring. Some throw rocks at the Israeli soldiers who are trying to stop the march. The soldiers shoot tear gas, spray water that stinks like sewage, and sometimes fire rubber-coated bullets.

Soldiers have killed two Palestinians in more than three years of demonstrations. They were relatives, as nearly all the 600 residents of Nabi Saleh are from the same extended family.

Mohammed Tamimi, 23, points out where Rushdie Tamimi was shot last November. "See that big tree over there?" he says, pointing across the road from the spring to a large olive tree. "Bullets in his leg and stomach."

He gestures up toward Nabi Saleh. "Mustafa — inside the village. In the street." Mustafa Tamimi was killed in 2011, after he was hit in the face with a tear gas canister shot by an Israeli soldier.

**Archaeological Report**

Israel captured the West Bank in the 1967 Arab-Israeli War, and today some 350,000 Jewish settlers live in the territory. They are far outnumbered by Palestinians, who oppose the settlements and are seeking the West Bank as part of a future state. No foreign governments support the settlements, which are one of the thorniest issues in the Israeli-Palestinian conflict.

Meanwhile, the Israeli administration that controls this part of the West Bank carried out anarchaeological survey of the spring area. Shlomy Zachary, the Israeli lawyer representing Bashir Tamimi in Israeli courts, says the Palestinian's family can't farm there because of this.

"The owners are not able to use it for agricultural needs because it was declared a historic site," Zachary says. "So they're not allowed to plow the land."

He has read the archaeological report and says the one potentially significant finding was a possible Roman-era stone used to mark the road, but that's now been cemented into one of the pools the Israeli teenagers built.

"We cannot avoid the thought," he says, that the archaeological research may be "simply a tool" to support the settlers' aspirations for a picnic spot here.

The first two times I visited the spring, once with Bashir Tamimi, once with Shifra Blass, Israeli soldiers showed up 20 minutes into our interviews and lounged in the shade nearby until we left.

The third time, Israeli tour guides in training arrived. Dmitri Kimmelfeld organizes tours to help Russian immigrants to Israel build a connection to West Bank land.

"We have a map where all the springs are," he says. "That is holy water."

Israeli soldiers have enforced a court order against the settler development of the spring. The Israeli teenagers were told to take down their first shade structure because it was deemed too permanent and was built without a permit. A canvas is now stretched across poles for shade.

**Competing Narratives**

Bashir Tamimi says he is fearful of visiting, though here and at other springs around the region, settlers say Palestinians are welcome. The people of Nabi Saleh and of Halamish generally don't know one another, but they both say this fight over this spring, symbolic of the much larger effort to establish territorial claims across the West Bank land, carries a legacy.

Blass' 27-year-old son Yehuda Blass finds the young Israelis' work to improve the spring inspirational.

"The heritage is if you believe in something you should make an effort to make it come true, and it will make a difference," he says.

Mohammed Tamimi, from Nabi Saleh, couldn't agree more.

"After we began our demonstration, we felt we are not alone in this conflict," he says. " We felt we have the power to do something."

He says maybe more people will die here, but he is not afraid. He says Palestinians have nothing to lose. "Life," he says, "is not very nice here."

"A West Bank Spring At The Center Of Deadly Struggle", 05/08/2013, online at: http://www.wbur.org/npr/209135029/a-west-bank-spring-at-the-center-of-deadly-struggle

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ Greece, Cyprus, Israel Energy and Water Deal Signed

Cyprus, Greece and Israel signed a deal to cooperate over energy and aiming at securing Europe´s energy supply yesterday.
A memorandum of understanding was signed by Cypriot Energy Minister George Lakkotrypis, his Greek counterpart Yannis Maniatis and Israel´s Silvan Shalom.

A statement said the three countries welcomed joint projects in the energy sector to "enhance the security of energy supply, sustainable development and cooperation among countries in the region." It said they also supported the privately initiated EuroAsia Interconnector project, which aims to link the three countries with an electricity cable.

"This project… could potentially allow for the export of electricity generated in the eastern Mediterranean to the EU energy market through the trans-European electricity networks," the communique said.

Maniatis said the MoU was a "significant moment" for relations between the three neighbours.

"Without doubt, developments in the energy sector and especially the exploitation of hydrocarbons, as well as a… high-voltage submarine cable linking Asia and Europe is an important factor for stability in the eastern Mediterranean." Natural gas has been discovered offshore Israel and Cyprus, and studies are underway on building a liquefied natural gas plant in Cyprus.
*(source: Capital)*

"Greece, Cyprus, Israel Energy and Water Deal Signed", 09/08/2013, online at:
http://greece.greekreporter.com/2013/08/09/greece-cyprus-israel-energy-and-water-deal-signed/

BACK TO TOP

## ❖ China and India 'water grab' dams put ecology of Himalayas in danger

More than 400 hydroelectric schemes are planned in the mountain region, which could be a disaster for the environment

The future of the world's most famous mountain range could be endangered by a vast dam-building project, as a risky regional race forwater resources takes place in Asia.

New academic research shows that India, Nepal, Bhutan and Pakistanare engaged in a huge "water grab" in the Himalayas, as they seek new sources of electricity to power their economies. Taken together, the countries have plans for more than 400 hydro dams which, if built, could together provide more than 160,000MW of electricity – three times more than the UK uses.

In addition, China has plans for around 100 dams to generate a similar amount of power from major rivers rising in Tibet. A further 60 or more dams are being planned for the Mekong river which also rises in Tibet and flows south through south-east Asia.

Most of the Himalayan rivers have been relatively untouched by dams near their sources. Now the two great Asian powers, India and China, are rushing to harness them as they cut through some of the world's deepest valleys. Many of the proposed dams would be among the tallest in the world, able to generate more than 4,000MW, as much as the Hoover dam on the Colorado river in the US.

The result, over the next 20 years, "could be that the Himalayas become the most dammed region in the world", said Ed Grumbine, visiting international scientist with the Chinese Academy of Sciences in Kunming. "India aims to construct 292 dams … doubling current hydropowercapacity and contributing 6% to projected national energy needs. If all dams are constructed as proposed, in 28 of 32 major river valleys, the Indian Himalayas would have one of the highest average dam densities in the world, with one dam for every 32km of river channel. Every neighbour of India with undeveloped hydropower sites is building or planning to build multiple dams, totalling at minimum 129 projects," said Grumbine, author of a paper in *Science*.

China, which is building multiple dams on all the major rivers running off the Tibetan plateau, is likely to emerge as the ultimate controller of water for nearly 40% of the world's population. "The plateau is the source of the single largest collection of international rivers in the world, including the Mekong, the Brahmaputra, the Yangtse and the Yellow rivers. It is the headwater of rivers on which nearly half the world depends. The net effect of the dam building could be disastrous. We just don't

know the consequences," said Tashi Tseri, a water resource researcher at the University of British Columbia in Canada.

"China is engaged in the greatest water grab in history. Not only is it damming the rivers on the plateau, it is financing and building mega-dams in Pakistan, Laos, Burma and elsewhere and making agreements to take the power," said Indian geopolitical analyst Brahma Chellaney. "China-India disputes have shifted from land to water. Water is the new divide and is going centre stage in politics. Only China has the capacity to build these mega-dams and the power to crush resistance. This is effectively war without a shot being fired."

According to Chellaney, India is in the weakest position because half its water comes directly from China; however, Bangladesh is fearful of India's plans for water diversions and hydropower. Bangladeshi government scientists say that even a 10% reduction in the water flow by India could dry out great areas of farmland for much of the year. More than 80% of Bangladesh's 50 million small farmers depend on water that flows through India.

Engineers and environmentalists say that little work has been done on the human or ecological impact of the dams, which they fear could increase floods and be vulnerable to earthquakes. "We do not have credible environmental and social impact assessments, we have no environmental compliance system, no cumulative impact assessment and no carrying capacity studies. The Indian ministry of environment and forests, developers and consultants are responsible for this mess," said Himanshu Thakkar, co-ordinator of South Asia Network on Dams, Rivers and People.

China and India have both displaced tens of millions of people with giant dams such as the Narmada and Three Gorges over the last 30 years, but governments have not published estimates of how many people would have to be relocated or how much land would be drowned by the new dams. "This is being totally ignored. No one knows, either, about the impact of climate change on the rivers. The dams are all being built in rivers that are fed by glaciers and snowfields which are melting at a fast rate," said Tsering.

Climate models suggest that major rivers running off the Himalayas, after increasing flows as glaciers melt, could lose 10-20% of their flow by 2050. This would not only reduce the rivers' capacity to produce electricity, but would exacerbate regional political tensions.

The dams have already led to protest movements in Uttarakhand, Himachal Pradesh, Sikkim, Assam and other northern states of India and in Tibet. Protests in Uttarakhand, which was devastated by floods last month, were led by Indian professor GD Agarwal, who was taken to hospital after a 50-day fast but who was released this week.

"There is no other way but to continue because the state government is not keen to review the dam policy," said Mallika Bhanot, a member of Ganga Avahan, a group opposing proposals for a series of dams on the Ganges.

Governments have tried to calm people by saying that many of the dams will not require large reservoirs, but will be "run of the river" constructions which channel water through tunnels to massive turbines. But critics say the damage done can be just as great. "[These] will complete shift the path of the river flow," said Shripad Dharmadhikary, a leading opponent of the Narmada dams and author of a report into Himalayan dams. "Everyone will be affected because the rivers will dry up between points. The whole hydrology of the rivers will be changed. It is likely to aggravate floods.
"A dam may only need 500 people to move because of submergence, but because the dams stop the river flow it could impact on 20,000 people. They also disrupt the groundwater flows so many people will end up with water running dry. There will be devastation of livelihoods along all the rivers."

"China and India 'water grab' dams put ecology of Himalayas in danger", 10/08/2013, online at:
**http://www.theguardian.com/global-development/2013/aug/10/china-india-water-grab-dams-himalayas-danger**

BACK TO TOP

### ❖ China to regulate water supplies amid waterdiversion

BEIJING - A draft regulation concerning water that is supplied to areas that are part of a south-to-north water diversion project was published for the purpose of soliciting public opinions onFriday.

The draft was posted on the website of the Legislative Affairs Office of the State Council.

The draft will regulate the way water is supplied by a water diversion project that will divertwater fro m South China to the arid north, according to a statement from the Legislative AffairsOffice.

Water supply plans for different regions should be sanctioned by the State Council, the draftsays.

Regions that benefit from the project should strictly regulate groundwater exploitation, improvetheir l ocal environments and eliminate or restrict the development of industrial, agricultural orconstruction projects that consume large amounts of water or create large amounts of pollution,it says.

The regions should also strengthen water quota management in order to save water, accordingto the d raft.

The draft says water sources and regions along the project's supply routes should enhancepollution tr eatment so as to ensure the quality of their water.

It stipulates criteria for the demarcation of water conservation areas, as well as measures forwater pol lution prevention and treatment regarding industry, agriculture and water-basedtransportation near water sources and along diversion routes.

The draft also covers the responsibilities of maintenance units.

The south-north water diversion project was conceived by former Chairman Mao Zedong in1952. The State Cou ncil approved the ambitious project in December 2002 after debates thatlasted nearly half a century.



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

The project, which will be built at an estimated cost of 500 billion yuan ($81 billion), hasaroused glo bal concerns over land use, possible regional climate changes, environmentaldamage, impact on agric ulture and suffering caused by massive relocation efforts.

The project is expected to divert 44.8 billion cubic meters of water annually from the YangtzeRiver a nd relieve water shortages in North China by 2050.

Construction on the project's 1,467km eastern route began in December 2002. The route isexpected t o supply water to north China by the end of 2013.

"China to regulate water supplies amid waterdiversion", 10/08/2013, online at:
http://www.chinadaily.com.cn/business/2013-08/10/content_16885283.htm

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ Mbarara faces hard time as River Rwizi dries up

*River Rwizi is running out of water frustrating most of the industries, including Nile Breweries manufacturing plant, recently established in Mbarara.*

Water experts say Rwizi, Uganda's biggest river feeding Lake Victoria is drying up and has been reduced to almost a channel after years of environmental destruction accelerating the impact of climate change.

Dr. Callisto Tindimugaya, a commissioner in the Ministry of Water and Environment told New Vision that the wetlands and forests that used to hold water and release it slowly to the rivers have suffered encroachment.

Rwizi is a Runyakitara word for flowing water. It is also the name of the river flowing from the hilly terrain of Buhweju, which washes through the dry land belt of Mbarara and Rakai on its way to Lake Victoria.

The river is regarded as a lifeline by pastoralists since it is the only source of water for cattle during the dry season in western Uganda.

However, human activity has affected the river and the available water in the dry season can no longer meet this demand, leading to shortage of water.

"Rwizi has reduced to trickles," says Amos Mugenyi, a resident adding, "the river shrinks every dry season, but this season has been the worst in the recent years."

The dry spell, Mugenyi says, started in May, a month earlier, forcing residents to compete for the available water in the river.

**Nile Breweries gets only 10% of water demand**

The water shortage is likely to affect the operations of a multibillion Nile Breweries factory in Mbarara expected to be launched by President Yoweri Museveni this month.

"At the moment, Nile Breweries can only access 10% of the water they need," says Jeconious Musingwire, the Mbarara natural resources officer.

Besides supplying water to the municiplaity through National water and Sewerage Corporation (NW&SC), pastoralists also rely on Rover Rwizi to water their animals.

"Can you imagine Nile Breweries wanted 75% of the water from NWSC?" wonders Musingwire.

Isaac Ongora, the manager at Nile Breweries Limited at Mbarara, says when the water levels drop, they depend on NWSC for supplies.

Other large commercial users of water in the area include Coca-Cola, six milk factories that are either operational or in the process of being set up and the proposed beef industry.

As the population increases, competition for water, which is described as the heart of development, is likely to escalate.

**Blessing in disguise**

Although the suspension of production by the Coca Cola plant in Mbarara was said to be linked to water shortage, it has been clarified that the plant put off production due to lack of market.

The plant was established to supply the Rwandan and eastern DRC markets but Rwanda has since developed its own capacity while the DRC market has been cut off due to insurgency.

**Construction of water reservoir**

Commissioner Tindimugaya, says the natural reservoirs, also referred to as water granaries, have been weakened.

"What is lacking is adequate management measures to keep the water," he says, adding, "the water runs through the river as soon as it rains since Rwizi is now a channel. The wetlands and forest cover along the river no longer hold water."

The Government proposal is to build a reservoir in order to regulate the flow of water. This would store the surplus water during the rainy season and then release it gradually in the dry season.

But experts warn that such engineering solutions to overcome the problem will not succeed unless the wetlands and forests in the nine districts along the river course are protected.

**Changes in river flow started a decade ago**

According to Musingwire, drastic changes were observed in the flow of River Rwizi in terms of quantity and quality about a decade ago.

"The river started flooding and then dried up as soon as the dry season set in," he says, adding that the water in the rainy season contains a lot of silt meaning that its catchment is undergoing encroachment.

Downstream particularly in Rakai where Rwizi is known as Bukora, the river dried up completely.

**Rwizi on its death bed**

There are huge boulders in the dry riverbed portraying a dying river. Experts say the stones being exposed in the riverbed show what the river has lost.

The once lush greenery in the hillsides and valleys has turned into expansive wastelands.

The supply of bananas, milk and beef to Kampala is trading away the charm and the beauty of the landscape and the river.

**Integrated Water Resources Management (IWRM) introduced**

According to Musingwire, IWRM has been piloted on Rwizi, but has suffered from inadequate funding and is almost not implemented.

"There is a mismatch between the money needed to manage environmental resources and what is allocated."

IWRM was supposed to promote sustainable use of the river through coordination by the Government, local government, NGOs, private sector and communities.

**Districts financially crippled**

Musingwire says though districts have limited resources, their funding is being spread thin resulting into unguided actions and environmental destruction.

He also blames local governments for failing to give the environment priority. Under budgeting, the politicians consider service delivery such as education and health as the priority. "The political will favour things that can easily be counted," says Musingwire. "Environmental resources are perceived to be limitless."

For instance, Mbarara provides only 0.7% of its budget to environmental management, enough to monitor the environment for just a few weeks, Tusingwire says.

Without proper agricultural practices, the land is becoming barren on the hillsides after repeated cultivation. So, the farmers shift to the wetlands that are fertile. Also, greed in cases where rich people behave like "governors" of land compromise the local people and councillors and convert the swamps into farmland or grazing grounds.

Unfortunately, Musingwire says the farmers hardly know that this is self-destruction. The degraded environment will undermine productivity meaning less income, according to Musingwire.

As western Uganda, which is also referred to as the land of honey and milk is being turned into a wasteland, economic growth is likely to decline. The destruction is likely to have a ripple effect.

Kampala's residents should be worried since half of their bananas, milk and beef comes from Rwizi's catchment. Every dry season will mean higher food prices yet gradual investment into the catchment would mean a sustained flow of the river and stable food prices.

"Mbarara faces hard time as River Rwizi dries up", 09/08/2013, online at: http://www.newvision.co.ug/news/645914-mbarara-faces-hard-time-as-river-rwizi-dries-up.html

BACK TO TOP

### ❖ New source of arsenic threatens groundwater in Vietnam, Stanford research finds

"Dig deep" to avoid naturally occurring arsenic contamination has been promoted as an answer to obtaining safe water in South Asia, which has experienced mass poisoning. But arsenic has been found in numerous deep wells drilled in the Mekong Delta region of southern Vietnam. Stanford Earth scientists suggest that the contamination occurs as arsenic is squeezed from ancient clay sediments surrounding the wells.

In Southern Asia, an estimated 100 million people have been exposed to risks from groundwater contaminated with naturally occurring arsenic. The tainted water, used for drinking, agriculture and industry, has resulted in a variety of serious health risks, including cancer.

Drilling deeper wells (the "dig deep" strategy) has become common in the search for clean water. But new research from the Stanford School of Earth Sciences has found that even deep wells might not remain arsenic-free.

The new research, published in *Proceedings of the National Academy of Sciences*, is part of ongoing efforts at Stanford to understand the extent and causes of the contamination, and to recommend precautions and solutions.

The scientists reviewed 42,000 well measurements taken throughout the multi-aquifer system of Vietnam's Mekong Delta – the southern tip of Vietnam, and the specific area of study. In an area spanning more than 1,000 square kilometers (386 square miles), arsenic was found in nearly 900 deep wells.

"Historically, deep wells often tested arsenic-free," said Laura Erban, a doctoral student inenvironmental Earth system science at Stanford and the lead author of the study. "However, contaminated deep wells are being reported more often in parts of West Bengal, Bangladesh, and the Red River Delta in northern Vietnam."

In some cases, the wells were contaminated when deep-pumping projects inadvertently transported shallow arsenic, or other substances that help mobilize arsenic, to greater depths.

But in the Mekong Delta, it appears there's an entirely different, and previously unsuspected, process contaminating deep wells.

When water is heavily pumped from an aquifer, surrounding clay layers compact, and water is expelled as the land sinks. If this expelled water contains substances such as arsenic, the groundwater can become contaminated. Land subsidence – the gradual sinking of land due to excessive pumping – is common in delta environments and can be measured.

"Buried clays may be analogous to 'dirty sponges,' releasing contaminated water when squeezed during pumping," Erban said.

By analyzing satellite radar observations of the area, the group found that the compaction of the clay-rich sediment has caused land subsidence of up to 3 centimeters per year. The researchers note that pumping-related land subsidence is particularly problematic in this region, much of which lies within 2 meters of sea level and is already subject to annual freshwater and saltwater flooding.

"This is the first time that satellite measurements have been used to support the occurrence of deep groundwater contamination," said Steven Gorelick, a professor of environmental Earth system science at Stanford, and co-author and project investigator of the study. "The approach can serve as a reconnaissance tool in environments prone to arsenic contamination but where well measurements may be sparse, such as economically underdeveloped regions."
Together, the ground-based data, satellite imagery and groundwater simulation model support the hypothesis that compacting deep clays is the likely cause of contamination.

"This work is a beautiful example of the application of physical data and physical reasoning to explain an apparently geochemical phenomenon," said Professor Charles Harvey of MIT, a pioneer in the study of groundwater arsenic contamination who reviewed the Stanford manuscript. "It should change how we think about pumping's effects on groundwater quality, and arsenic in particular, in a variety of sedimentary systems."

For instance, while it was previously believed that intervening layers of clay protected deep aquifers from shallow arsenic contamination, those same clays might actually pose a threat if heavy pumping causes clays to compact and in turn force arsenic into the deep aquifers. Additionally, deep wells may be compromised more quickly and extensively by contamination that originates at depth, compared with shallow sources.

The scientists suggest that the impacts of arsenic contamination from deep groundwater extraction may be reduced by quantifying the extent of deep groundwater arsenic, limiting heavy pumping and treating extracted groundwater to meet health standards.

Stanford Professors Howard Zebker, geophysics, and Scott Fendorf, environmental Earth system science, were co-authors and investigators involved in this study.

"New source of arsenic threatens groundwater in Vietnam, Stanford research finds", 09/08/2013, online at: **http://news.stanford.edu/news/2013/august/arsenic-water-vietnam-080913.html**

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ As dams loom, Mekong fishermen fear for their future

The waters of the mighty Mekong have sustained generations of families but nowadays its fishermen often find their nets empty and fear hydropower mega-dams will destroy their livelihoods.

Pat Chaiwong has fished the Mekong in northern Thailand for three decades but good days are increasingly rare.

"Some days I can catch fish. Some days I don't catch any," lamented the 67-year-old, one of about two dozen fishermen in the community of Wiang Kaen in the northern province of Chiang Rai.

For many in the community, the reason lies upriver in the Chinese province of Yunnan where dams on the upper reaches of the river disturb the delicate cycle of nature.

"Usually the water would rise (and fall) with the seasons," said fisherman Decha Chaiwong, 48.

Now it ebbs and flows depending on whether the dams are open or closed, he said.

"That's why the fish have decreased."

Today a new threat looms downstream in neighbouring Laos.

The Xayaburi hydropower project is one of 11 planned on the lower Mekong, raising worries for the future of the 60mn people in the region estimated to depend on the river in some way.

The 4,800km long waterway, the longest in Southeast Asia, is home to hundreds of species of freshwater fish including the endangered giant Mekong catfish, according to conservation group WWF.

Environmentalists warn that damming the lower Mekong would trap vital nutrients, increase algae growth and prevent dozens of species of migratory fish — including the giant catfish — swimming upstream to spawning grounds.

"If there is the Xayaburi dam, fish cannot lay eggs and the numbers of fish and their breeds decrease. There will definitely be a big impact," said Niwat Roykaew, president of the Natural Resources and Culture Conservation Network in Chiang Rai province.

Many of the roughly 200 species in the lower Mekong swim upriver to spawn — one of the most important mass river migrations in the world, according to the Mekong River Commission (MRC).

The hydroelectric project at Xayaburi, led by Thai group CH Karnchang, has sharply divided four Mekong nations — Laos, Vietnam, Cambodia and Thailand — who formed the MRC, an intergovernmental group.

Communist Laos, one the world's most under-developed nations, believes the planned 1,285 megawatt dam — which will cost $3.5bn according to state media — will help it become "the battery of Southeast Asia".

Thailand has agreed to buy most of the electricity generated by the project, but Cambodia and Vietnam fear the dam could seriously affect fish migration and sediment flows, hitting their farming and fishing industries.

Despite the concerns, construction on the main part of the dam began in November with Laos predicting completion by the end of 2019.

Niwat described the decision to go ahead without listening to people's concerns as "a coup d'état against the Mekong River".

"We're the children of the Mekong River. We were born and grew up on the Mekong. It has taken care of us and provided for us. Then one day the dams came," he added.

His association has filed a lawsuit against the state-run Electricity Generating Authority of Thailand (EGAT) and the Thai government in an attempt to block the project.

Neither EGAT nor developer CH Karnchang responded to request for comment.

Laos has modified the design to try to minimise the impact, said Hans Guttman, chief executive officer of the Mekong River Commission Secretariat.

The changes include a system to flush sediment through the dams and allow fish to migrate through fish passages, he said.

"It is still obviously up for question whether this sediment flushing will work as envisaged because it has never been tested, and there is also concern about whether the fish passages will work on a structure this big," he added.

In a study published in 2011, the MRC warned that the construction of 11 dams on the river in Laos and Cambodia as well as dozens more on tributaries, could cause fish catch to drop by at least 25% by 2030.

Thai villagers are fighting "on behalf of the Mekong" and also for people in Laos, Vietnam and Cambodia who have less freedom of speech, said Pianporn Deetes with campaign group International Rivers.

"There are many festivals and traditions connected to the Mekong river," she said, such as the mythical Naga snake that protects the Mekong.

"But if the dams are blocking the river, this means the Naga cannot move upstream," she added.

The same goes for the Mekong giant cat fish, one of the world's biggest freshwater fish which can reach three metres in length and 300 kilos in weight.

Already threatened by overfishing, only about 200 are estimated to remain, according to a recent study by WWF, which fears that dam construction will drive the iconic creature to extinction.

It has been years since one ended up in fisherman Pat's net.

"In the past, I caught a lot of them but now not at all," he said. "I don't know where they all went."

"As dams loom, Mekong fishermen fear for their future", 09/08/2013, online at: http://www.gulf-times.com/asean-philippines/188/details/362282/as-dams-loom,-mekong-fishermen-fear-for-their-future

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ Officials: Rural NM facing water crisis

ALBUQUERQUE, N.M. — State officials have been fielding a steady stream of phone calls and emails from the managers of community drinking water systems around the state as drought refuses to give up its grip on New Mexico.

The managers are looking to the state for help as they work to avert a crisis. Water levels are still dropping, aging infrastructure is being pushed to its limits and federal funding is growing more scarce.

In all, the state has identified nearly 300 drinking water systems that are considered vulnerable. Many of them depend on a single source of water and have no backup plan if conditions worsen.

"We really have been experiencing calls for assistance and notifications of water shortages and outages throughout the state in a way that we haven't seen in recent drought years," Danielle Shuryn of the New Mexico Environment Department said during a conference call.

Just last month, tens of thousands of gallons of water had to be trucked to the town of Magdalena after the community's sole operating well failed, leaving about 1,000 residents and several businesses without water.

A coalition of government agencies and nonprofit organizations is now trying to help water system operators prepare so they don't become the next Magdalena. The groups have teamed up to help communities with engineering work to identify backup water sources, monitor existing sources and develop emergency plans in the event of a water outage.

An initial round of letters will be sent to 290 community water systems determined to be at the greatest risk, but Shuryn said the state plans to make the program open to any interested water system.

With drought putting pressure on supplies, small communities around New Mexico are seeing wells filling with silt and failing, said Matt Holmes, executive director of the New Mexico Rural Water Association, a partner in the project.

"There are a lot of factors and I think the drought is sort a stressor. That adds an additional stress, and it might be the straw that breaks the camel's back," Holmes said. "In many of these communities where we see these water shortages, it's really infrastructure problems that are the core failure."

Another goal of the collaboration is public education. Despite a heavy dose of monsoonal rains in July, state officials said the drought is far from over. New Mexico still leads the nation when it comes to the worst and most widespread drought conditions.

"A larger view of this work is to encourage mindful use of water, water conservation and how we can be more efficient with this limited resource," said Morgan Nelson, a policy analyst with the department.

"Officials: Rural NM facing water crisis", 07/08/2013, online at:
http://www.newsobserver.com/2013/08/07/3089621/review-nearly-300-nm-towns-face.html

BACK TO TOP

### ❖ Water will cost more than oil

Water will be more expensive than oil in the near future. If in the past wars were started because of oil, today they will start because of water.

There are already many examples of that, the most recent being the rising tension between Egypt and Ethiopia over the Nile River. Israel is involved in this and helping Ethiopia to build a dam. This is what is happening outside our border.

Now let us look at what is happening inside our borders. Water in Saudi Arabia is very scarce yet we are among the top nations when it comes to consuming water.

According to a recent report in a Saudi local daily, Saudi Arabia for the first time ever consumed 8 million cubic meters of water in one day. This is equal to 800,000 water tanks of 10 tons load. The report stated that the individual consumption of water reached 265 liters, which is double the consumption of an individual living in the European Union.

If we are going to continue the way we are with the annual increase of population and do not use solar power to desalinate water, then we will not have any oil to export. We have to remember that 50 years ago, we had underground water reserves enough to last us for 250 years. Through mismanagement and misuse, we consumed it in growing wheat and other failed ventures. I hope that the future generation will not blame us for our misuse of this precious resource.

"Water will cost more than oil", 11/08/2013, online at:
**http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentid=20130808176281**

BACK TO TOP

### ❖ The Battle for Water *by* Brahma Chellaney*

The sharpening international geopolitical competition over natural resources has turned some strategic resources into engines of power struggle. Transnational water resources have become an especially active source of competition and conflict, triggering a dam-building race and prompting growing calls for the United Nations to recognize water as a key security concern.

Water is different from other natural resources. After all, there are substitutes for many resources, including oil, but none for water. Similarly, countries can import fossil fuels, mineral ores, and resources from the biosphere like fish and timber; but they cannot import water, which is essentially local, on a large scale and on a prolonged – much less permanent – basis. Water is heavier than oil, making it very expensive to ship or transport across long distances even by pipeline (which would require large, energy-intensive pumps).

The paradox of water is that it sustains life but can also cause death when it becomes a carrier of deadly microbes or takes the form of a tsunami, flash flood, storm, or hurricane. Many of the greatest natural disasters of our time – including, for example, the Fukushima catastrophe in 2011 – have been water-related.

Global warming is set to put potable-water supplies under increasing strain – even as oceans rise and the intensity and frequency of storms and other extreme weather events increase. Rapid economic and demographic expansion has already turned adequate access to potable water into a major issue across large parts of the world. Lifestyle changes, for example, have spurred increasing per capita water consumption, with rising incomes promoting dietary change, for example, especially higher consumption of meat, production of which is ten times more water-intensive, on average, than plant-based calories and proteins.

Today, the earth's human population totals slightly more than seven billion, but the livestock population at any given time numbers more than 150 billion. The direct ecological footprint of the livestock population is larger than that of the human population, with rapidly rising global meat consumption becoming a key driver of water stress by itself.

Political and economic water wars are already being waged in several regions, reflected in dam construction on international rivers and coercive diplomacy or other means to prevent such works.

Consider, for example, the silent water war triggered by Ethiopia's dam building on the Blue Nile, which has elicited Egyptian threats of covert or overt military reprisals.

A report reflecting the joint judgment of US intelligence agencies warned last year that the use of water as a weapon of war or a tool of terrorism would become more likely in the next decade in some regions. The InterAction Council, comprising more than 30 former heads of state or government, has called for urgent action to prevent some countries battling severe water shortages from becoming failed states. The US State Department, for its part, has upgraded water to "a central US foreign policy concern."

In many countries, inadequate local water availability is increasingly constraining decisions about where to set up new manufacturing facilities and energy plants. The World Bank estimates that such constraints are costing China 2.3% of GDP. China, however, is not yet in the category of water-stressed states. Those that are, stretching from South Korea and India to Egypt and Israel, are paying an even higher price for their water problems.

These countries already understand that water is a renewable but finite resource. Nature's water-replenishment capacity is fixed, limiting the world's usable freshwater resources to about 200,000 cubic kilometers. But the human population has almost doubled since 1970, while the global economy has grown even faster.

Major increases in water demand, however, are being driven not merely by economic and demographic growth, or by the additional energy, manufacturing, and food production to meet rising consumption levels, but also by the fact that the global population is getting fatter. The average body mass index (BMI) of humans has been increasing in the post-World War II period, but especially since the 1980's, with the prevalence of obesity doubling in the past three decades.

Heavier citizens make heavier demands on natural resources, especially water and energy. The issue thus is not just about how many mouths there are to feed, but also how much excess body fat there is on the planet. For example, a study published in the British journal BMC Public Health has found that if the rest of the world had the same average body mass index as the US, this would be the equivalent of adding almost one billion people to the global population, greatly exacerbating water stress.


Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

With the era of cheap, bountiful water having been replaced by increasing supply and quality constraints, many investors are beginning to view water as the new oil. The dramatic rise of the bottled-water industry since the 1990's attests to the increasing commodification of the world's most critical resource. Not only are water shortages likely to intensify and spread, but consumers also will increasingly have to pay more for their water supply.

This double whammy can be mitigated only by innovative water management and conservation, and by developing nontraditional supply sources. As in the oil and gas sector – where tapping unconventional sources, such as shale and tar sands, has proved a game changer – the water sector must adopt all unconventional options, including recycling wastewater and desalinating ocean and brackish waters.

In short, we must focus on addressing our water-supply problems as if our lives depended on it. In fact, they do.

*Brahma Chellaney, Professor of Strategic Studies at the New Delhi-based Center for Policy Research, is the author of Asian Juggernaut, Water: Asia's New Battleground, and Water, Peace, and War: Confronting the Global Water Crisis.

"The Battle for Water *by* Brahma Chellaney*", 08/08/2013, online at: http://www.todayszaman.com/news-323115-the-battle-for-waterby-brahma-chellaney-.html

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ Rice gene digs deep to triple yields in drought

A gene that gives rice plants deeper roots can triple yields during droughts, according to Japanese researchers writing in *Nature Genetics* this week (4 August).

Rice is a staple food for nearly half of the world's population, but is also particularly susceptible to drought owing to its shallow roots, researchers say.

The new study shows that by pointing roots down instead of sideways, the *Deeper Rooting 1*(DRO1) gene results in roots that are nearly twice as deep as those of standard rice varieties.

"If rice adapts to or avoids drought conditions using deeper roots, it can get **water** and nutrients from the deep soil layers," says the study's lead author Yusaku Uga, a researcher with Japan's National Institute of Agrobiological Sciences.

Uga and his team found that in moderate drought conditions, the yield of rice with *DRO1* was double that of the shallow-rooted rice variety. Under severe drought conditions, this increased to 3.6 times greater.

"The most important point is that we had rice grains produced under drought conditions," says Uga. "When rice crops just tolerate drought, they cannot get water and nutrients, resulting in a kind of survival mode."

The *DRO1* gene occurs naturally in more than 60 rice varieties. For the study, the research team crossbred a rice variety carrying *DRO1* with a shallow-rooted variety and then bred the offspring together to produce a rice crop in which *DRO1* was uniformly present.

The International Rice Research Institute (IRRI) estimates that an additional 8-10 million tonnes of rice will be needed each year to keep rice prices affordable at around US$300 per tonne. Finding a drought-resistant variety of rice may be key to attaining this goal, according to researchers.

"Drought is the most widespread and damaging of all **environmental**stresses," says Sophie Clayton,

head of communications at IRRI. "In some states in India, severe drought can cause as much as 40 per cent yield loss [in rice crops]. Moreover, with the onset of **climate change**, droughts may become more frequent and more severe."

"Rice gene digs deep to triple yields in drought", 07/08/2013, online at: http://www.trust.org/item/20130807114708-cbkfy/?source=hptop&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=1d80c5126b-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-1d80c5126b-250657169

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ India floods: fears grow for farmland devastated in Uttarakhand

*With the Indian government focusing on rescue and relief operations, the plight of farmers has been largely ignored*

More than a month after flash floods in the Himalayan state of Uttarakhand in north India left 1,000 dead and 6,000 missing, the government has yet to release a full agricultural impact assessment, triggering fears about the extent of damage to farmland.
Questions remain as to how soon soil restoration efforts will bear fruit and when the farm economy, which accounted for just under 11% of the state's $160bn (£105bn) gross domestic product in 2012-13, will be restored.

Heavy flooding on 15 and 16 June, the result of torrential rains and glacial leaks in the Himalayas, wreaked havoc on Uttarakhand, as the head streams of the river Ganges swelled and swept away pilgrims, homes, roads, cattle and buildings.
With the government focusing its efforts almost entirely on an emergency rescue and relief operation co-ordinated by the armed forces (with more than 42,000 rescues), the plight of farmers has been largely ignored.

Experts from the region say the summer crops have been washed out and the farms are in no shape to yield a winter harvest this year; the sowing season for rice, which coincides with the height of the monsoon (June to September) has been delayed as a result of heavy inundation of paddy fields caused by downpours and landslides.

Though agricultural fields are routinely inundated with the clay that runs down surrounding mountains during summer glacial melts and the annual monsoon, this latest calamity has created a disaster zone in what is frequently referred to as the "land of the gods".

"It is possible that the top soil may have been altered for a considerably longer duration of time than expected," Ram Kishan, regional emergency manager of south Asia for Christian Aid, told IPS.

This Himalayan state, irrigated naturally by perennial glacier-fed rivers, boasts a high degree of agricultural diversity. *Rajma*, or kidney beans, and potatoes comprise the staple diet of the majority of Uttarakhand's native population of 10 million people, according to the 2011 census.
Crops of rice, wheat, barley, millet, lentils, pulses, potatoes, fruit, vegetables, flowers, spices, herbs and mushrooms have been drowned by the floods, and debris from landslides has compromised the grazing pastures of the state's roughly 11.9m head of livestock, including cows, bullocks, buffaloes, sheep, goats, horses, pigs, hens, chickens and geese.

"Initial estimates suggest that 25 to 30% of cultivation has been affected," Kishan said. This represents a huge chunk of the state's average annual production of 8.2m tonnes. NGOs fear the resulting price rise in essential commodities will adversely affect the average farming family.

In total, 753,711 hectares of cultivated farmland have been either deluged or washed away by the Mandakini and Alaknanda rivers, which spring from the Gomukh snout of the huge Gangotri glacier in the Himalayas.

More than 65% of Uttarakhand's residents, most of whom are subsistence farmers with small landholdings of less than a single hectare per family, are dependent on agriculture, according to Aide et Action.

**Farmers and tourism**

Farmers reliant on seasonal tourism to supplement their incomes during the monsoon months are particularly affected. Uttarakhand is a popular destination for foreign tourists and local pilgrims: "Forty seven million domestic tourists and [half a] million foreign tourists were expected in the current fiscal year," according to Shekhar Ambati at Aide et Action. But the flash floods, he said, eroded this economic base.

The tourism industry is one of the largest employers in the region, hiring locals as porters, guides, drivers, naturalists and translators. Others rent out their mules, offering tourists rides on rocky terrain.

The tourist economy supports local artisans and makers of traditional handicrafts, opens up jobs as caterers and cooks through the hospitality sector, and enables families to establish small businesses such as tea stalls, souvenir shops or grocery stores.

Ambati fears the destruction of the "lifeline of religious tourism" will snowball, affecting the number of tourists arriving in the region and further endangering farmers' incomes.

Quoting small business owners and vegetable sellers at the main market in the town of Rudraprayag, Eilia Jafar of Care India told IPS that farmers are starting to feel the effect of scant agricultural yields. "The number of daily wage labourers coming to the main market has reduced to a great extent," Jafar told IPS.
Road conditions have deteriorated significantly since the floods: some were washed away; others have been made impassable by debris, which is having a negative impact on the market and economy, Jafar said.

Farmers who relied on the tourist infrastructure to sell their produce are among the worst affected. "The state's chamber of commerce and industry estimates that Uttarakhand has lost revenue earnings of over $20bn (£13bn) from its tourism sector alone in the current fiscal year on account of torrential rains that devastated the state," Ambati said.

**Government intervention**

With tourism unlikely to recover for at least two to three years, the situation calls for intervention from the government to ensure farmers have food and livelihood security in the short term.

Experts have suggested that the government:

• Subsidise agriculturists' losses with higher minimum support prices or procurement prices;

• Begin soil restoration, watershed management and afforestation efforts and take steps to clear encroachments in order to begin long-term recovery;

• Start removing the debris in tourist circuits;

• Conduct a postmortem of the state government's reaction (or lack thereof) to precise forecasts made by the Indian meteorological department;

• Brainstorm and implement employment generation schemes, harness local resources optimally to mitigate outward migration and strengthen the local economy to safeguard against future disasters or natural calamities; and

• Ensure the reconstruction of tourist infrastructure conforms to the state's safety code.

"India floods: fears grow for farmland devastated in Uttarakhand", 05/08/2013, online at: **http://www.theguardian.com/global-development/2013/aug/05/india-floods-farmland-uttarakhand?CMP=twt_fd&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=120aef9224-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-120aef9224-250657169**

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

## ❖ Today's Climate Change Proves Much Faster Than Changes in Past 65 Million Years

Climate change is occurring 10 to 100 times faster than in the past and ecosystems will find it hard to adjust

The climate is changing at a pace that's far faster than anything seen in 65 million years, a report out of Stanford University says.

The amount of global temperature increase and the short time over which it's occurred create a change in velocity that outstrips previous periods of warming or cooling, the scientists said in research published in today's *Science*.
If global temperatures rise 1.5 degrees Celsius over the next century, the rate will be about 10 times faster than what's been seen before, said Christopher Field, one of the scientists on the study. Keeping the temperature increase that small will require aggressive mitigation, he said.

If the Earth stays on its current course without reversing greenhouse gas emissions, and global temperatures rise 5 degrees Celsius, as scientists say is possible, the pace of change will be at least 50 times and possibly 100 times swifter than what's occurred in the past, Field said. The numbers are imprecise because the comparison is to an era 55 million years ago, he said.

"The planet has not experienced changes this rapid in 65 million years," Field said. "Humans have never seen anything like this."

Field, in the school's Department of Global Ecology with the Carnegie Institution for Science, and Noah Diffenbaugh, an associate professor of environmental Earth system science, reviewed and synthesized existing research on climate change for a special issue of *Science*: "Natural Systems in Changing Climates."
They looked at climate events or major transitions that have happened on Earth since the extinction of the dinosaurs. Those include the period when the Earth emerged from an ice age. Temperatures then increased between 3 and 5 degrees Celsius, similar to the amount scientists say is possible with ongoing climate change. But that change happened over about 20,000 years, the scientists said, and not decades as is happening now.

They also looked at a period when global temperatures dropped 11 to 12 degrees over a period 52 million to 34 million years ago.

"That's a larger change in global temperature than what's likely to occur over the next century, but it happened over 18 million years," Diffenbaugh said. "So it was a high-magnitude but relatively low-rate event.

"We find periods of Earth's history where the global temperature change was of similar magnitude, but the rate was an order of magnitude slower."

**Ecosystems shifting a yard a day**

The changes that are expected ahead will happen much faster than the rate at which species and ecosystems typically are able to adjust, Field said.

Plants and animals essentially would need to move about 1 yard each day farther north or higher in elevation to maintain the conditions they prefer, Field said. While farmers and others can shift where they grow crops, Field said, it's different for a butterfly or a maple tree.

"Maple trees are not good at moving," Field said, adding, "You don't have forests moving over long distances very, very fast."

Trees can shift over time when seeds are blown and squirrels carry acorns, but it typically is not that rapid, he said. The fastest that trees have had to move in the past was tens of meters per year. That's known from pollen records, he said.

"We actually don't have any good examples of them moving as fast as they'll need to in the future because the climate zones haven't moved that fast," Field said.

At the same time, species and plants will be affected by other human-induced changes, the paper said.

"In responding to those rapid changes in climate, organisms will encounter a highly fragmented landscape that is dominated by a broad range of human influences," the study said. "The combination

of high climate-change velocity and multidimensional human fragmentation will present terrestrial ecosystems with an environment that is unprecedented in recent evolutionary history."

"Today's Climate Change Proves Much Faster Than Changes in Past 65 Million Years", 02/08/2013, online at: http://www.scientificamerican.com/article.cfm?id=todays-climate-change-proves-much-faster-than-changes-in-past-65-million-years&WT.mc_id=SA_WR_20130807

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ Water a Key Issue as Developing Countries Drive Growth in Global Food Production

Developing countries will account for much of the world's growth in agricultural production, demand, and trade during the next decade, as production growth in developed countries slows, according to reports from leading food policy organizations. The shift will pose challenges for the quality and abundance of water supplies in regions like South America, Asia and Africa.

The growth rate of world agricultural production is set to slow overall when compared to the growth rate of the past decade, but developing countries will continue to outpace developed countries, according to the 2013-2022 Agricultural Outlook released in June by the Organization for Economic Cooperation and Development (OECD) and the Food and Agriculture Organization of the United Nations (FAO). Average world food production will increase 1.5 percent annually, compared to the 2.1 percent annual growth seen from 2003-2012. The slowdown is a result of rising costs for agricultural inputs, such as oil and fertilizer, as well as the increasing scarcity of key resources like water and land. Climate change could also play a role by exposing crops to more severe droughts and floods and rising temperatures.

Least Developed Countries—defined by the United Nations as "low-income countries suffering from the most severe structural impediments to sustainable development"— have the greatest potential for increasing food production in the next decade. These countries are expected to exceed the world average in agricultural growth, at a rate of about 2.75 percent through 2022, while the agricultural sectors of Brazil, Russia, India and China will grow by 1.5 percent per year. In developed countries, on the other hand, farm output will increase just 0.75 percent annually over the next decade.

"Most food demand and food production growth is expected to occur in the group of developing countries, as population and economic growth are centered in these regions." Claudia Ringler, Deputy Division Director of Environment and Production Technology at the Washington, D.C.-based International Food Policy Research Institute (IFPRI), wrote to Circle of Blue. IFPRI's 2012 Global Food Policy Report also concluded that developing countries will play a larger role in world food production and trade.

Closing the gap between agricultural production in developed countries and developing countries is an important step toward feeding a global population that is expected to reach 9 billion people and

demand twice as much food by 2050. The intense agricultural systems employed by developed countries, however, have exerted much pressure on water supplies, while policies in developing countries have also allowed the mismanagement of water resources. To avoid exhausting natural resources while still boosting food production, organizations like the OECD are calling for a shift in farm policy toward "green growth."

**Water Pollution and Depletion Test Farmers**

Growing agricultural sectors are leading to a "host of challenges" for water in developing countries, though these challenges vary case by case, Ringler said.

"Governance structures are often quite weak and water is seldom considered when investment decisions for industries, urban areas and even for agriculture are taken," she wrote. "Water laws are seldom enforced. Agriculture remains the largest water user, consuming about 80 percent of all fresh water withdrawals, but economic incentives for improving water conservation in agriculture are seldom in place."

As Circle of Blue found in India, even countries with abundant water supplies face scarcity issues due to this lack of management and conservation. Some countries, like Vietnam, that subsidize water for farmers have removed even the small irrigation service fees following the recent spate of food price crises, Ringler said. Other regions face a combination of high demand, natural scarcity, and "pollution-induced" water scarcity.

"In some developing countries, the pressure on the environment is really high," Ignacio Pérez, of the OECD's Trade and Agriculture Directorate, wrote to Circle of Blue. "For example, China has a fifth of world population but only 5 percent of its productive agricultural surface. Obviously, industrialization and closing the gap to western diets in these countries poses a real challenge."

While agricultural growth provides developing countries with an opportunity to improve water management, many are facing the same pollution and water depletion problems that have occurred in developed countries.

"Avoiding some of the adverse impacts on surface and groundwater supplies by developing countries will be a challenge," Ringler said. "For now the situation looks already much worse in many

developing countries—for example, the groundwater depletion in the U.S. is bad, but it's much worse in large parts of India where more than 50 percent of food is produced from groundwater. To turn things around in the developing world requires a re-focus of investments into institution building and demand management as well as into agricultural research for better crops."

**Overcoming Water Supply Issues**

In order to meet the water-agriculture challenge—in terms of water supply—countries are turning to a number of solutions. The development of multi-purpose dams for storing irrigation water, the implementation of advanced irrigation technologies, and research into crops that can tolerate droughts and floods, are all methods being pursued by developing countries to secure water and improve agricultural yields, according to Ringler.

"Green growth for food and agriculture is not only desirable and achievable, it is also essential if the food and nutrition requirements of future generations are to be met," Pérez said. "The specific approach varies by agro-ecology, farming system and market conditions but consistently will involve increasing the conservation and sustainable use of natural resources in agricultural production systems, as well as the reduction of waste and pollution associated with inefficient input use and degraded ecosystems."

"Water a Key Issue as Developing Countries Drive Growth in Global Food Production", 02/08/2013, online at: http://www.circleofblue.org/waternews/2013/world/draft-water-a-key-issue-as-developing-countries-drive-growth-in-global-food-production/

BACK TO TOP



Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
Tel: +90(312)4302609 Fax: +90(312)4303948 orsam@orsam.org.tr

### ❖ Sudan floods kill 11, affect almost 100,000: UN

KHARTOUM: Heavy rains and flash floods in Khartoum and other parts of Sudan have killed 11 people and affected almost 100,000 in the past week, the United Nations said on Tuesday.

Giving the first official figures for the impact of the flooding, which began on August 1, the UN's Office for the Coordination of Humanitarian Affairs said the capital region and Nile state to its north were the worst hit, but that five other states were also inundated.

Eight of the deaths occurred in the greater Khartoum area, where almost 60,000 people were affected, data showed.

OCHA said "an estimated 98,500 people have been affected by heavy rain and flash floods" in a zone from Red Sea state in the east, through Khartoum state, to South Darfur in the west.

It cited figures from the Sudanese Red Crescent Society and another local humanitarian group, for the period to August 4.

"The flash floods have killed 11 people and destroyed or damaged more than 14,000 houses in the states affected," OCHA said, citing the local aid groups.

"Immediate needs of the affected people include emergency shelter, health and water and sanitation services," OCHA said.

A flight into the capital on Tuesday revealed water-logged farm fields east of the Blue Nile river, and many areas resembling small lakes in the adjacent urban area, an AFP reporter said.

Drainage is poor in the capital, where even a little rain can cause flooding but this year's water surge was unusually severe.

"Sudan floods kill 11, affect almost 100,000: UN", 06/08/2013, online at: http://www.arabnews.com/news/460444

BACK TO TOP